FUNAI

SERVICE MANUAL

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- Specifications
- Preparation for Servicing
- Adjustment Procedures
- Schematic Diagrams
- CBA' s

Sec. 2: Deck Mechanism Section
- Standard Maintenance
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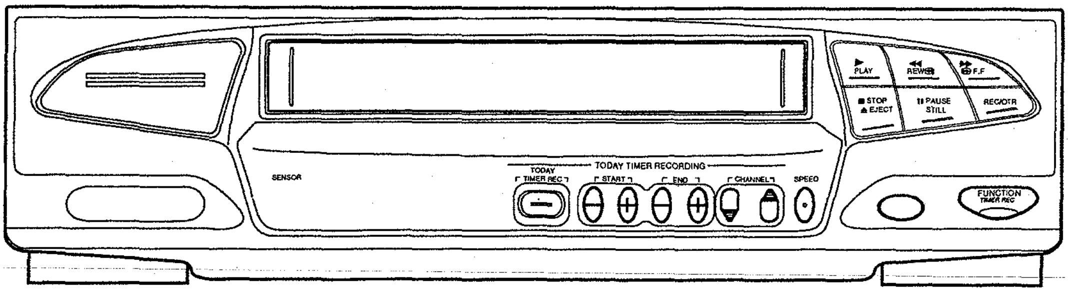
- Exploded views
- Parts List

V15132

VIDEO RECORDER

9A-009 / 9A-029


PLAY
REW
F.F
STOP
EJECT
PAUSE
STILL
REC/OTR
SENSOR
TODAY
TIMER REC
TODAY TIMER RECORDING
START
END
CHANNEL
SPEED
FUNCTION
TIMER REC

VHS
PAL

MAIN SECTION

VIDEO RECORDER

9A-009 / 9A-029

Sec. 1: Main Section

- Specifications
- Preparation for Servicing
- Adjustment Procedures
- Schematic Diagrams
- CBA' s

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SPECIFICATIONS

Description	Unit	Minimum	Nominal	Maximum	Condition
1. Video					F6-A
1-1 Video Output (PB)	Vp-p	0.8	1.0	1.2	SP Mode
1-2 Video Output (R/P)	Vp-p	0.8	1.0	1.2	SP Mode
1-3 Video S/N Y (R/P)	dB	40	44		SP Mode
1-4 Video Color S/N AM (R/P)	dB	37	41		SP Mode
1-5 Video Color S/N PM (R/P)	dB	30	36		SP Mode
1-6 Resolution (PB)	Line	230	245		SP Mode
2. Servo					F6-N
2-1 Jitter Low (PB)	µsec	0.12	0.07		SP Mode
2-2 Wow & Flutter (R/P)	%	0.5	0.3		SP Mode
3. Audio					F6-A
3-1 Output (PB)	dBV	-11	-8	-5	SP Mode
3-2 Output (R/P)	dBV	-11	-8	-3.5	SP Mode
3-3 S/N (R/P)	dB	36	41		SP Mode
3-4 Distortion (R/P) Input ; -10dB	%	4.0	1.0		SP Mode
3-5 Freq. response (R/P) at 100Hz	dB	-7	-4		SP Mode
(-20dB ref. 1kHz) at 8kHz	dB	-10	-4		SP Mode
4. Tuner					
4-1 Channel VL	CH	E2-E4, X-S4			E-E Mode
VH	CH	E5-E12, S5-S10, S11-S30			E-E Mode
UHF	CH	E21-E69, S31-S41			E-E Mode
4-2 Video Output	Vp-p	0.8	1.0	1.2	E-E Mode
4-3 Video S/N (E 45CH)	dB	39	42		E-E Mode
4-4 Audio Output	mV/rms	250	400	550	E-E Mode
4-5 Audio S/N	dB	40	46		E-E Mode

Note: Nominal specs represent the design specs. All units should be able to approximate these – some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition that still might be considered acceptable; In no case should a unit fail to meet limit specs.

IMPORTANT SAFETY PRECAUTIONS

Product Safety Notice

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection, nor can the protection they give necessarily be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by a ⚠ on schematics and in parts lists. Use of a substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire, and/or other hazards. The Product's Safety is under review continuously and new instructions are issued whenever appropriate. Prior to shipment from the factory, our products are carefully inspected to confirm with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

Precautions during Servicing

A. Parts identified by the ⚠ symbol are critical for safety.
Replace only with part number specified.

B. In addition to safety, other parts and assemblies are specified for conformance with regulations applying to spurious radiation. These must also be replaced only with specified replacements.
Examples: RF converters, RF cables, noise blocking capacitors, and noise blocking filters, etc.

C. Use specified internal wiring. Note especially:
1) Wires covered with PVC tubing
2) Double insulated wires
3) High voltage leads

D. Use specified insulating materials for hazardous live parts. Note especially:
1) Insulation tape
2) PVC tubing
3) Spacers
4) Insulators for transistors

E. When replacing AC primary side components (transformers, power cord, etc.), wrap ends of wires securely about the terminals before soldering.

F. Observe that the wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).

G. Check that replaced wires do not contact sharp edges or pointed parts.

H. When a power cord has been replaced, check that 10-15 kg of force in any direction will not loosen it.

I. Also check areas surrounding repaired locations.

J. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

K. Crimp type wire connector
The power transformer uses crimp type connectors which connect the power cord and the primary side of the transformer. When replacing the transformer, follow these steps carefully and precisely to prevent shock hazards.
Replacement procedure
1) Remove the old connector by cutting the wires at a point close to the connector.
Important: Do not re-use a connector. (Discard it.)
2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.
3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.
4) Use a crimping tool to crimp the metal sleeve at its center. Be sure to crimp fully to the complete closure of the tool.

L. When connecting or disconnecting the internal connectors, first, disconnect the AC plug from the AC outlet.

Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1 : Ratings for selected area

AC Line Voltage	Region	Clearance Distance (d) (d')
220 to 240 V	Europe or Australia	≥ 4 mm(d) ≥ 6 mm(d')

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

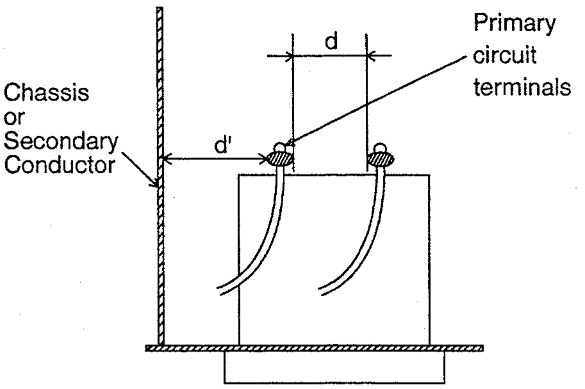


Fig. 1

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method (Power ON) :

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z. See Fig. 2 and the following table.

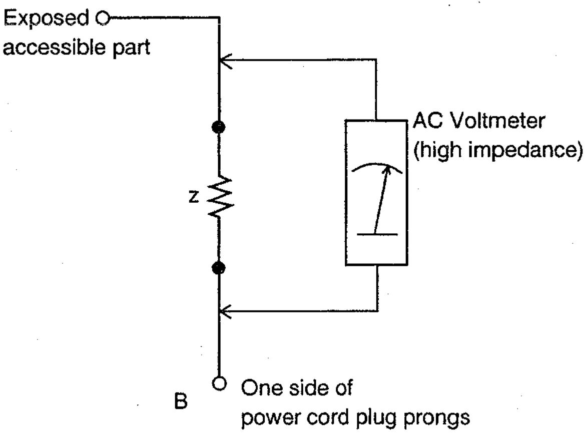

Exposed accessible part
AC Voltmeter (high impedance)
Z
B
One side of power cord plug prongs

Fig. 2

Table 2 : Leakage current ratings for selected areas

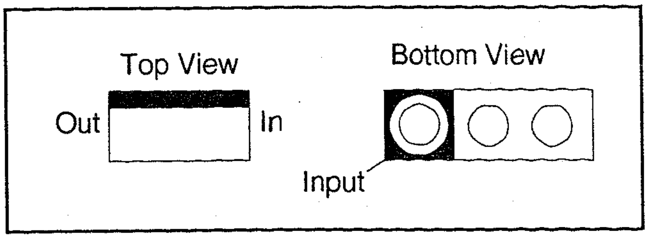
AC Line Voltage	Region	Load Z	Leakage Current (i)	One side of power cord plug prongs (B) to:
220 to 240 V	Europe or Australia	2kΩ RES. Connected in parallel	i≤0.7mA AC Peak i≤2mA DC	RF or Antenna terminals
		50kΩ RES. Connected in parallel	i≤0.7mA AC Peak i≤2mA DC	A/V Input, Output

Note: This table is unofficial and for reference only.
Be sure to confirm the precise values.

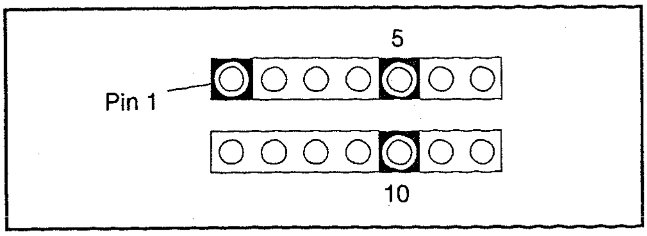
STANDARD NOTES FOR SERVICING

Circuit Board Indications

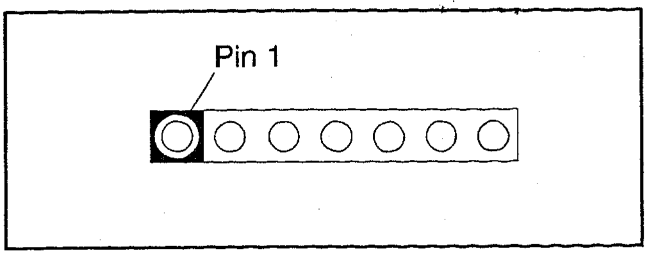
a. The output pin of the 3 pin Regulator ICs is indicated as shown.



b. For other ICs, pin 1 and every fifth pin are indicated as shown.

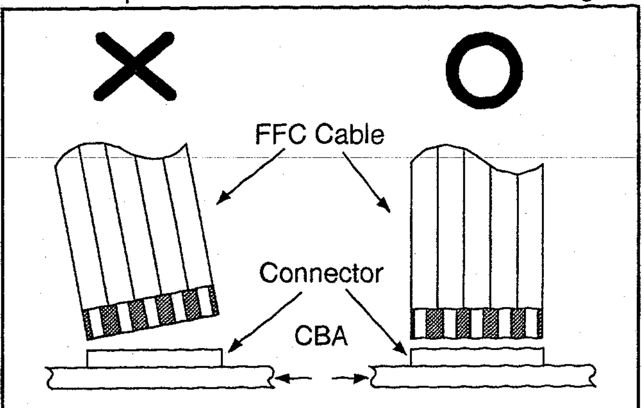


c. The 1st pin of every male connector is indicated as shown.



Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



* Be careful to avoid a short circuit.

How to Remove / Install Flat Pack IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

(1) Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

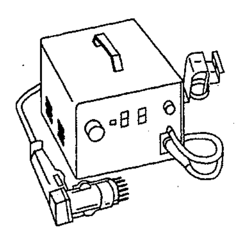


Fig. S-1-1

(2) Remove the flat pack-IC with tweezers while applying the hot air.

Caution:

1. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)
2. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder- lands under the IC when removing it.

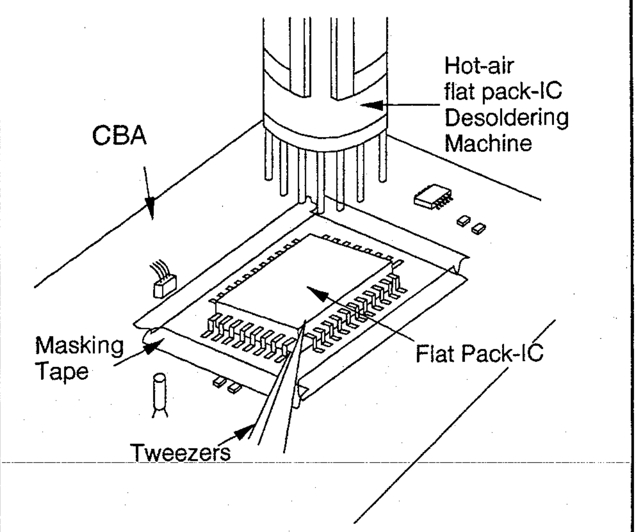

Hot-air flat pack-IC Desoldering Machine
CBA
Masking Tape
Flat Pack-IC
Tweezers

Fig. S-1-2

With Soldering Iron:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

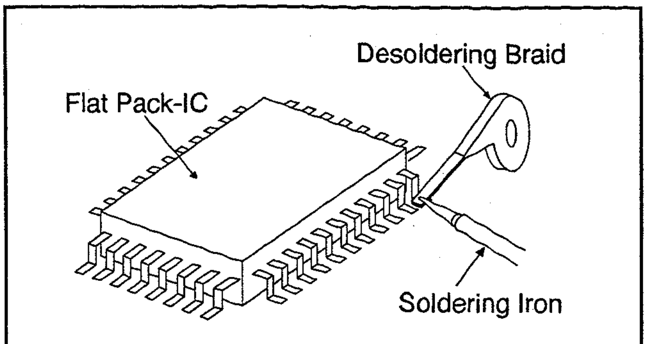

Desoldering Braid
Flat Pack-IC
Soldering Iron

Fig. S-1-3

(2) Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

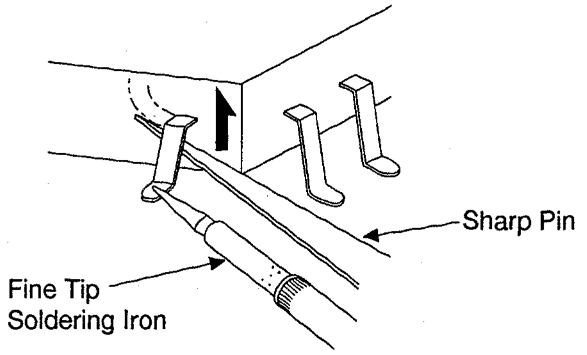

Sharp Pin
Fine Tip
Soldering Iron

Fig. S-1-4

With Iron Wire:

(1) Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

(2) Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.

(3) While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig.S-1-5.

Note:

When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

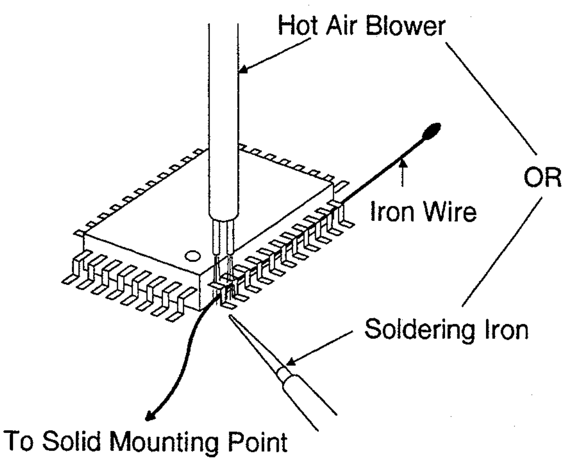

Hot Air Blower
OR
Iron Wire
Soldering Iron
To Solid Mounting Point

Fig. S-1-5

2. Installation

(1) Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.

(2) The " • " mark on the flat pack-IC indicates pin 1. (See Fig. S-1-6.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then pre- solder the four corners of the flat pack-IC. (See Fig. S-1-7.)

(3) Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

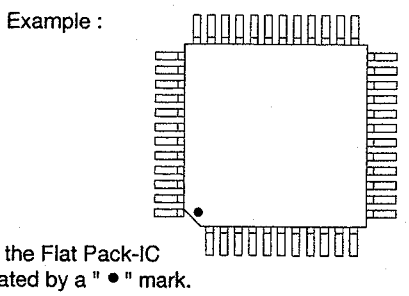

Example :
Pin 1of the Flat Pack-IC
is indicated by a " • " mark.

Fig. S-1-6

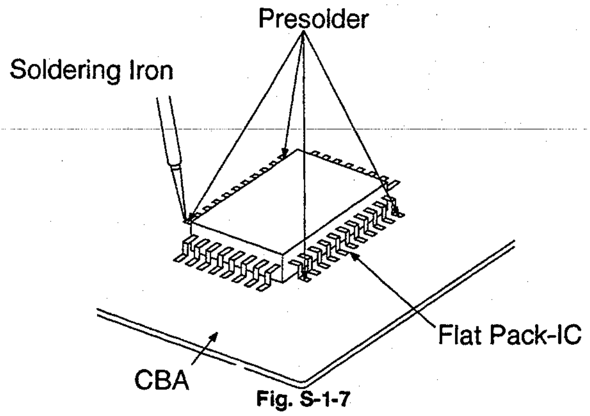

Presolder
Soldering Iron
Flat Pack-IC
CBA

Fig. S-1-7

Instructions for Handling Semiconductors

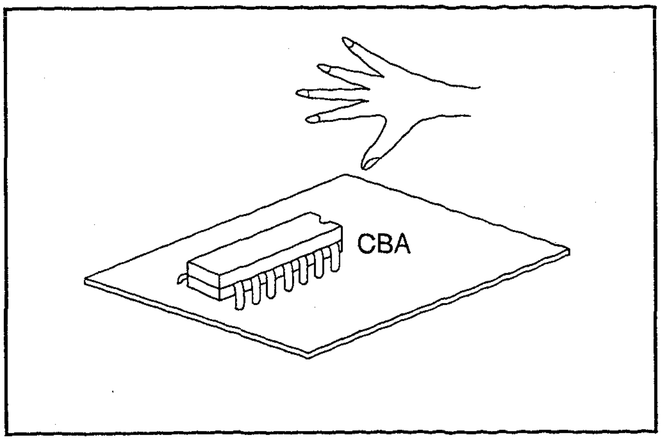
Electrostatic breakdown of the semiconductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

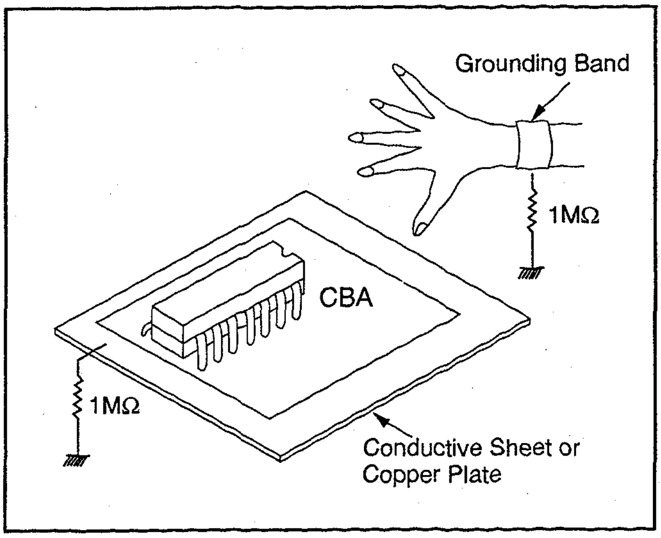
1. Ground for Human Body

Be sure to wear a grounding band (1M ohm) that is properly grounded to remove any static electricity that may be charged on the body.

2. Ground for Workbench

Be sure to place a conductive sheet or copper plate with proper grounding (1M ohm) on the workbench or other surface, where the semiconductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semiconductors with your clothing.





PREPARATION FOR SERVICING

How to use Deck Extension Cable

(1) Remove the Deck Mechanism Assembly. If needed, remove the Main CBA from the chassis.

(2) Use the Deck Extension Cable to connect the Deck Mechanism Assembly to the Main CBA. (Deck Extension Cable: N1091XA)

Note: Use the connectors grouped as "2H".

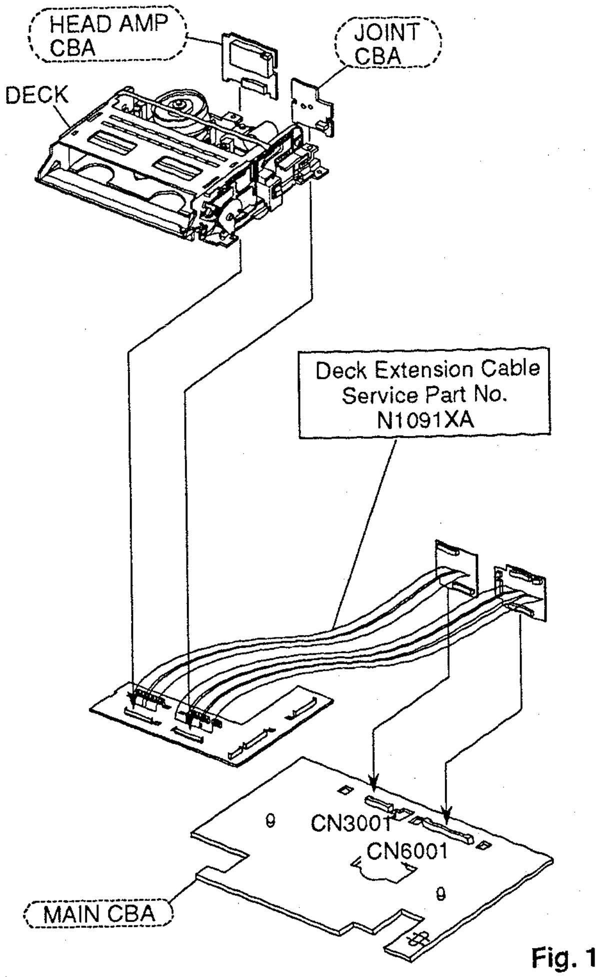

HEAD AMP CBA
JOINT CBA
DECK
Deck Extension Cable
Service Part No.
N1091XA
CN3001
CN6001
MAIN CBA

Fig. 1

How to Enter the Service Mode

Note: When the unit is set in the service mode, the whole display will keep blinking.

About Optical Sensors

Caution:

An optical sensor system is used for the Tape Start and End Sensors on this equipment. Carefully read and follow the instructions below. Otherwise the unit may operate unexpectedly.

What to do for preparation

After plugging in the unit, connect J2 (SENSOR INHIBITION) to J1 (GROUND). This will stop the function of Tape Start and End Sensors. (If these TPs are connected before plugging in the unit, the function of the sensors will stay valid.)

Bring a tape to the tape inlet of the Deck Mechanism Assembly and press the PLAY button. The tape will be loaded into the Deck Mechanism Assembly.

Note: Because the Tape End Sensors are inactive, do not run a tape all the way to the start or the end of the tape to avoid tape damage.

About REC-Safety Switch

Caution:

The REC-Safety Switch is directly mounted on the Main CBA. When the Deck Mechanism Assembly is removed from the Main CBA for servicing, this switch does not work automatically.

What to do for preparation

In order to record, press the Rec button while pushing REC-SAFETY SW on the Main CBA.

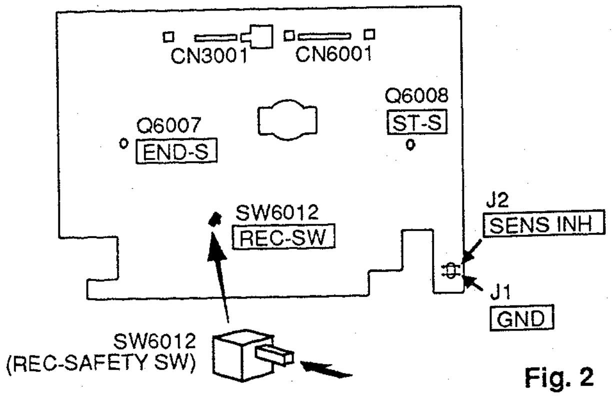
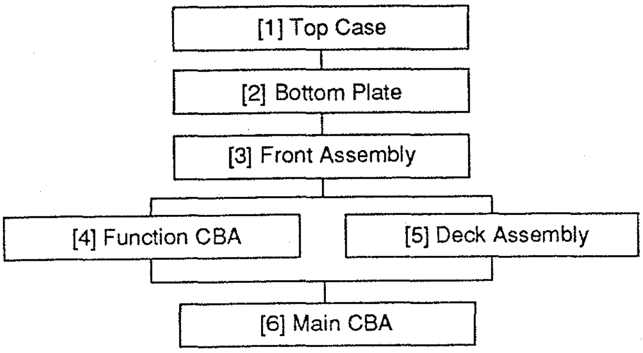

CN3001
CN6001
Q6008
ST-S
Q6007
END-S
SW6012
REC-SW
J2
SENS INH
J1
GND
SW6012
(REC-SAFETY SW)

Fig. 2

CABINET DISASSEMBLY INSTRUCTIONS

1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were.



Disassembly Method

ID/ LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE/ *UNHOOK/UNLOCK/ RELEASE/UNPLUG/ DESOLDER	Note
[1]	Top Case	1	5(S-1)	-
[2]	Bottom Plate	2	2(S-2), *2(L-1)	1
[3]	Front Assembly	3, 4	*8(L-2), Deck Holder	2, 3
[4]	Function CBA	5	*(L-3), (CN5501)	4
[5]	Deck Assembly	6	(S-3), 5(S-4), (CN6501, CN2901, CN3501)	5
[6]	Main CBA	7	*4(L-4)	-

① ② ③ ④ ⑤

①: Identification (location) No. of parts in the figures

②: Name of the part

③: Figure Number

④: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, L=Locking Tab, S=Screw, CN=Connector
*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(S-2) = two Screws (S-2),
2(L-2) = two Locking Tabs (L-2)

⑤: Refer to "Reference Notes".

Reference Notes

CAUTION Locking Tabs (L-2) are fragile. Be careful not to break them.

1. Remove 2 Screws (S-2), and slide the Bottom Plate in the direction of arrow while pushing 2 Locking Tabs (L-1). (Fig. 2)
2. Release 8 Locking Tabs (L-2). To do this, first release Locking Tab (A) on each side, then two Locking Tabs (B) at the bottom, and then four Locking Tabs (C) at the top. (Fig. 3, 4)
3. Remove Deck Holder. (Fig. 3)
4. Release Locking Tab (L-3) and disconnect Connector (CN5501) to remove Function CBA. Hold Main CBA while pulling up Function CBA. (Fig. 5)
5. Remove Screw (S-3) and 5 Screws (S-4). Disconnect (CN6501), then slowly lift Deck Assembly up. Lifting Deck Assembly disconnects 2 Connectors (CN2901, CN3501). (Fig. 6)

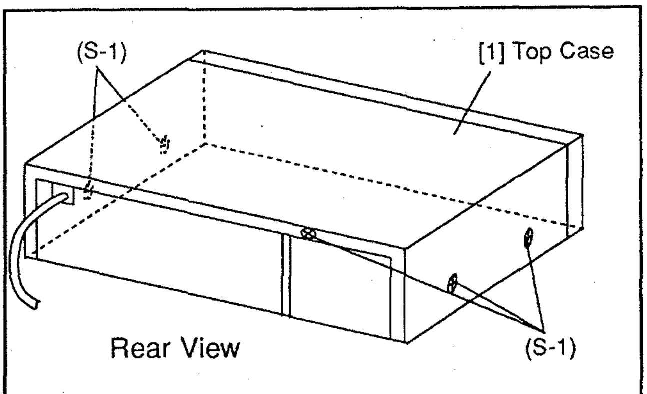
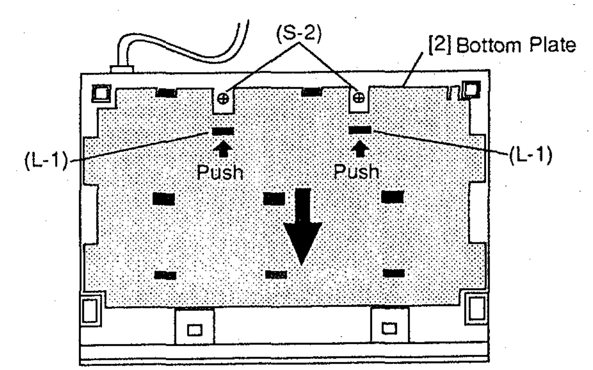


Fig. 1



Bottom View

Fig. 2

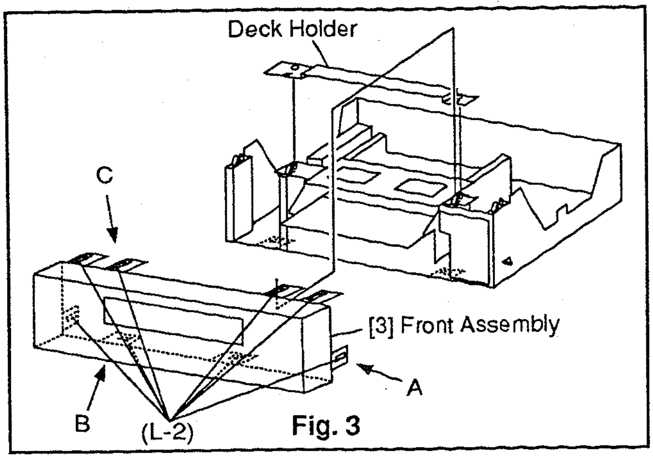

Deck Holder
C
[3] Front Assembly
A
B
(L-2)

Fig. 3

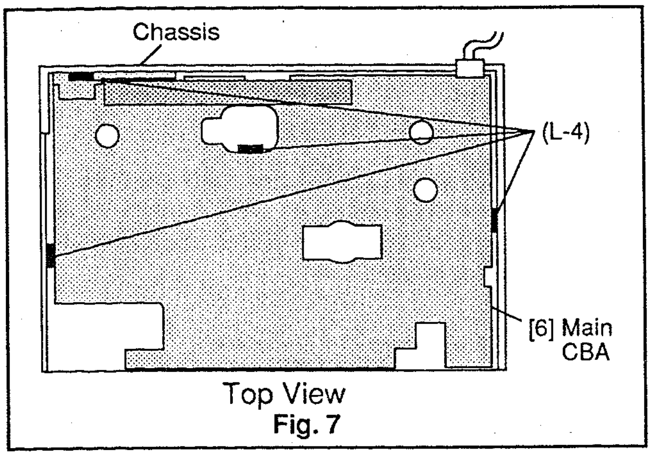

Chassis
(L-4)
[6] Main CBA
Top View

Fig. 7

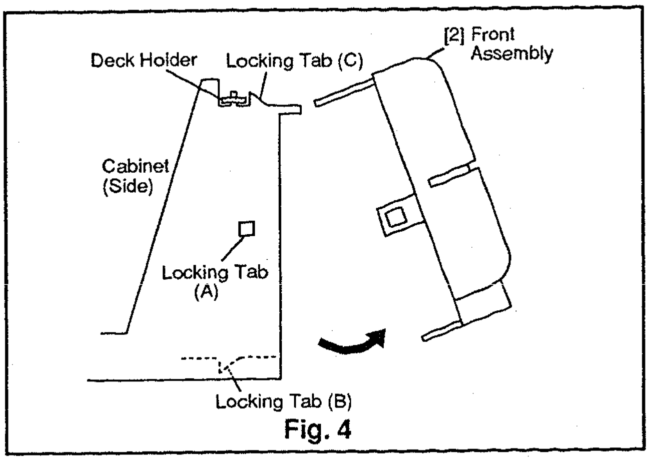

[2] Front Assembly
Deck Holder
Locking Tab (C)
Cabinet (Side)
Locking Tab (A)
Locking Tab (B)

Fig. 4

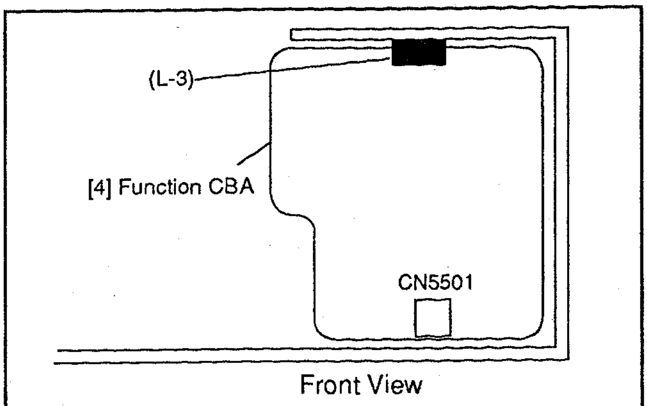

(L-3)
[4] Function CBA
CN5501
Front View

Fig. 5

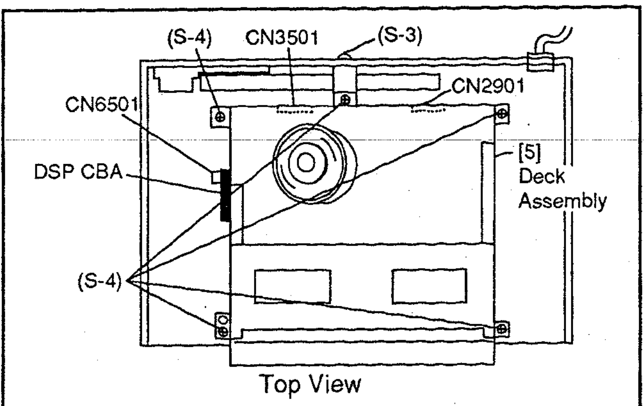
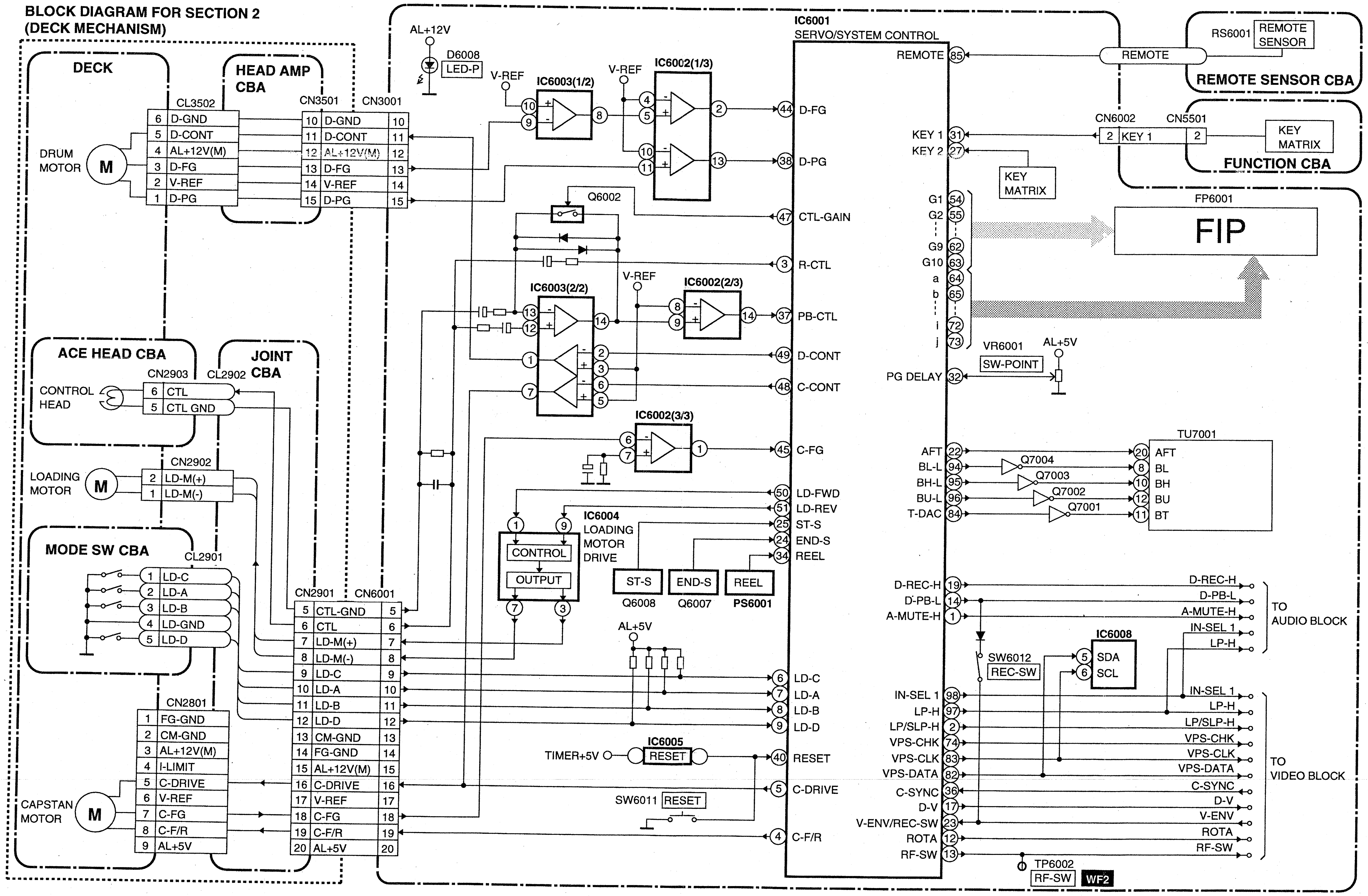
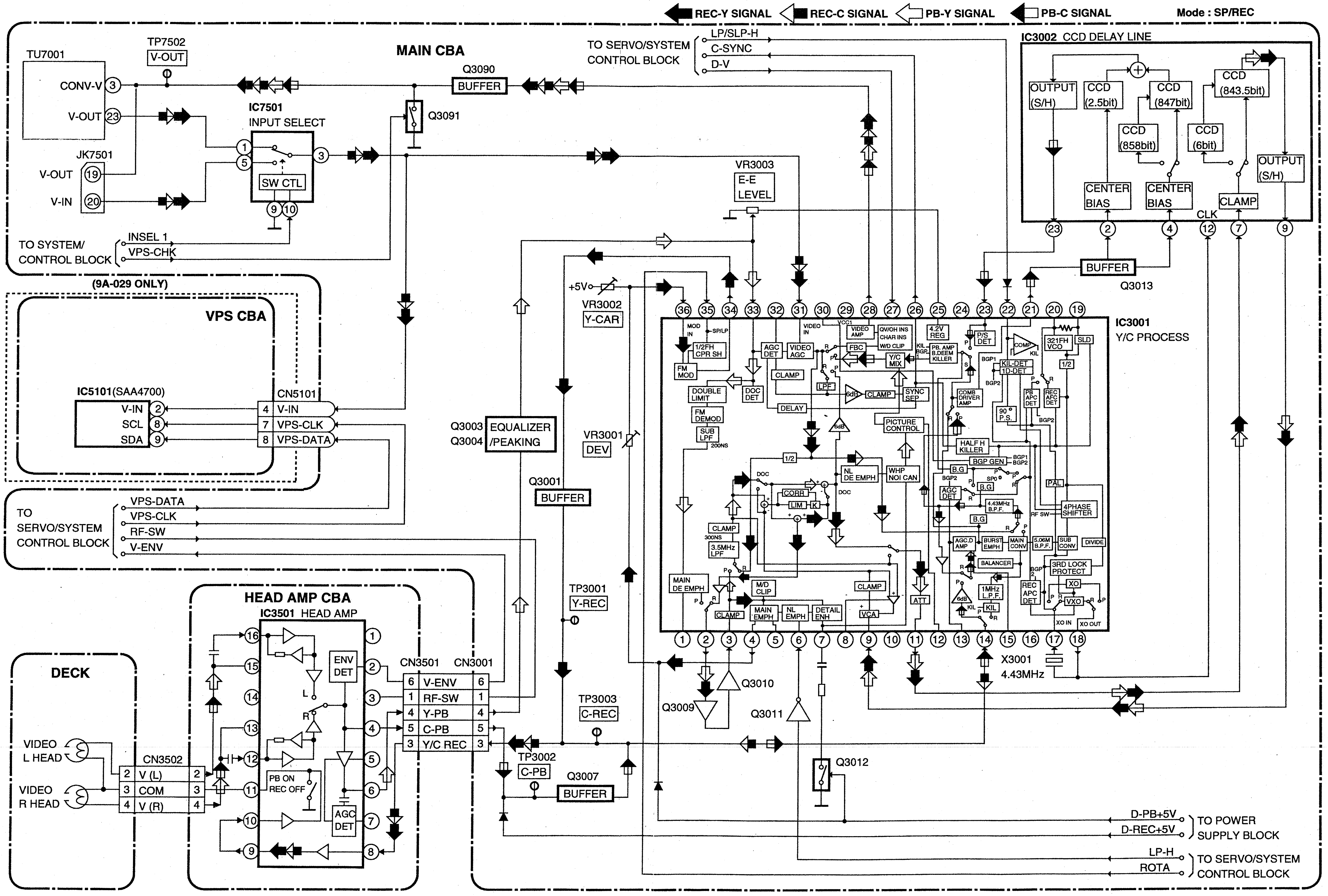

(S-4)
CN3501
(S-3)
CN2901
CN6501
DSP CBA
[5] Deck Assembly
(S-4)
Top View

Fig. 6

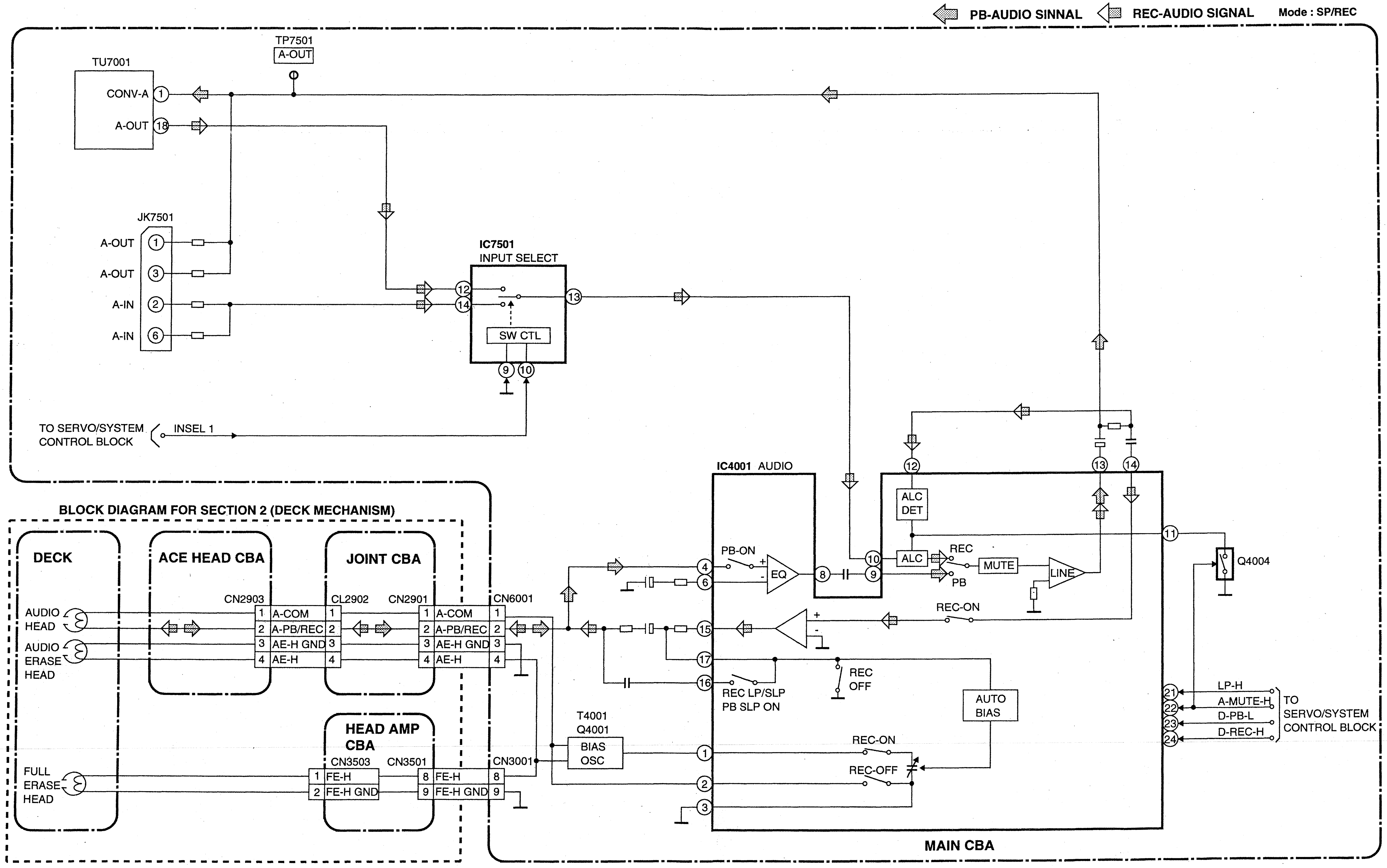
Servo/System Control Block Diagram


BLOCK DIAGRAM FOR SECTION 2 (DECK MECHANISM)
DECK
HEAD AMP CBA
CL3502
CN3501
CN3001
DRUM MOTOR
M
6 D-GND
5 D-CONT
4 AL+12V(M)
3 D-FG
2 V-REF
1 D-PG
10 D-GND 10
11 D-CONT 11
12 AL+12V(M) 12
13 D-FG 13
14 V-REF 14
15 D-PG 15
ACE HEAD CBA
CN2903
CL2902
JOINT CBA
CONTROL HEAD
6 CTL
5 CTL GND
LOADING MOTOR
CN2902
2 LD-M(+)
1 LD-M(-)
MODE SW CBA
CL2901
1 LD-C
2 LD-A
3 LD-B
4 LD-GND
5 LD-D
CN2801
1 FG-GND
2 CM-GND
3 AL+12V(M)
4 I-LIMIT
5 C-DRIVE
6 V-REF
7 C-FG
8 C-F/R
9 AL+5V
CAPSTAN MOTOR
CN2901
CN6001
5 CTL-GND 5
6 CTL 6
7 LD-M(+) 7
8 LD-M(-) 8
9 LD-C 9
10 LD-A 10
11 LD-B 11
12 LD-D 12
13 CM-GND 13
14 FG-GND 14
15 AL+12V(M) 15
16 C-DRIVE 16
17 V-REF 17
18 C-FG 18
19 C-F/R 19
20 AL+5V 20
AL+12V
D6008
LED-P
V-REF
IC6003(1/2)
IC6002(1/3)
Q6002
IC6003(2/2)
IC6002(2/3)
IC6002(3/3)
IC6004
LOADING MOTOR DRIVE
CONTROL
OUTPUT
ST-S
END-S
REEL
Q6008
Q6007
PS6001
AL+5V
IC6005
RESET
TIMER+5V
SW6011
RESET
IC6001
SERVO/SYSTEM CONTROL
REMOTE 85
44 D-FG
38 D-PG
47 CTL-GAIN
3 R-CTL
37 PB-CTL
49 D-CONT
48 C-CONT
45 C-FG
50 LD-FWD
51 LD-REV
25 ST-S
24 END-S
34 REEL
6 LD-C
7 LD-A
8 LD-B
9 LD-D
40 RESET
5 C-DRIVE
4 C-F/R
KEY 1 31
KEY 2 27
KEY MATRIX
G1 54
G2 55
G9 62
G10 63
a 64
b 65
i 72
j 73
PG DELAY 32
VR6001
SW-POINT
AL+5V
AFT 22
BL-L 94
BH-L 95
BU-L 96
T-DAC 84
Q7004
Q7003
Q7002
Q7001
TU7001
20 AFT
8 BL
10 BH
12 BU
11 BT
D-REC-H 19
D-PB-L 14
A-MUTE-H 1
SW6012
REC-SW
IC6008
5 SDA
6 SCL
IN-SEL 1 98
LP-H 97
LP/SLP-H 2
VPS-CHK 74
VPS-CLK 83
VPS-DATA 82
C-SYNC 36
D-V 17
V-ENV/REC-SW 23
ROTA 12
RF-SW 13
TP6002
RF-SW
WF2
D-REC-H
D-PB-L
A-MUTE-H
IN-SEL 1
LP-H
TO AUDIO BLOCK
IN-SEL 1
LP-H
LP/SLP-H
VPS-CHK
VPS-CLK
VPS-DATA
C-SYNC
D-V
V-ENV
ROTA
RF-SW
TO VIDEO BLOCK
RS6001
REMOTE SENSOR
REMOTE
REMOTE SENSOR CBA
CN6002
CN5501
2 KEY 1
2
KEY MATRIX
FUNCTION CBA
FP6001
FIP

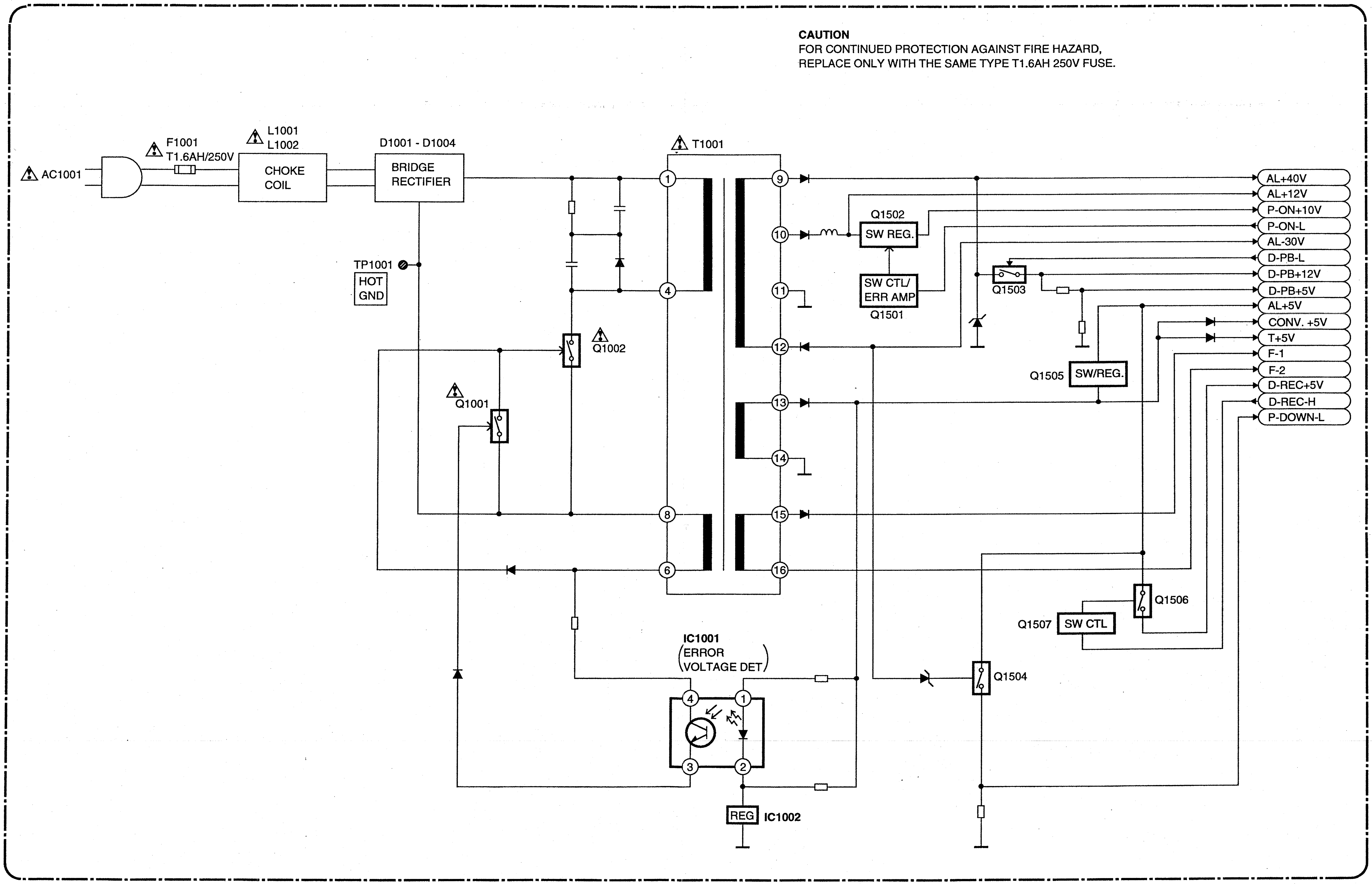
Video Block Diagram


REC-Y SIGNAL
REC-C SIGNAL
PB-Y SIGNAL
PB-C SIGNAL
Mode : SP/REC
MAIN CBA
TU7001
CONV-V
V-OUT
TP7502
V-OUT
JK7501
V-OUT
V-IN
IC7501
INPUT SELECT
SW CTL
Q3090
BUFFER
Q3091
TO SYSTEM/
CONTROL BLOCK
INSEL 1
VPS-CHK
(9A-029 ONLY)
VPS CBA
IC5101(SAA4700)
V-IN
SCL
SDA
CN5101
V-IN
VPS-CLK
VPS-DATA
TO
SERVO/SYSTEM
CONTROL BLOCK
VPS-DATA
VPS-CLK
RF-SW
V-ENV
TO SERVO/SYSTEM
CONTROL BLOCK
LP/SLP-H
C-SYNC
D-V
VR3003
E-E
LEVEL
+5V
VR3002
Y-CAR
Q3003
Q3004
EQUALIZER
/PEAKING
VR3001
DEV
Q3001
BUFFER
TP3001
Y-REC
TP3003
C-REC
TP3002
C-PB
Q3007
BUFFER
IC3002 CCD DELAY LINE
OUTPUT
(S/H)
CCD
(2.5bit)
CCD
(847bit)
CCD
(843.5bit)
CCD
(858bit)
CCD
(6bit)
OUTPUT
(S/H)
CENTER
BIAS
CENTER
BIAS
CLAMP
CLK
BUFFER
Q3013
IC3001
Y/C PROCESS
MOD IN
SP/LP
1/2FH
CPR SH
FM
MOD
AGC
DET
VIDEO
AGC
VIDEO IN
VIDEO AMP
FBC
QV/OH INS
CHAR INS
W/D CLIP
Y/C
MIX
4.2V
REG
PB. AMP
B.DEEM
KILLER
P/S
DET
COMP
321FH
VCO
SLD
1/2
KIL-DET
1D-DET
CLAMP
DOUBLE
LIMIT
DOC
DET
LPF
6dB
CLAMP
SYNC
SEP
COMB
DRIVER
AMP
PB
APC
DET
REC
AFC
DET
FM
DEMOD
DELAY
90°
P.S.
SUB
LPF
200NS
PICTURE
CONTROL
HALF H
KILLER
1/2
NL
DE EMPH
WHP
NOI CAN
B.G
BGP GEN
AGC
DET
B.G
PAL
DOC
CORR
LIM
K
4.43MHz
B.P.F.
4PHASE
SHIFTER
RF SW
B.G
CLAMP
300NS
3.5MHz
LPF
AGC.D
AMP
BURST
EMPH
MAIN
CONV
5.06M
B.P.F.
SUB
CONV
DIVIDE
BALANCER
3RD LOCK
PROTECT
MAIN
DE EMPH
M/D
CLIP
CLAMP
ATT
REC
APC
DET
1MHz
L.P.F.
XO
VXO
6dB
KIL
KIL
CLAMP
MAIN
EMPH
NL
EMPH
DETAIL
ENH
VCA
XO IN
XO OUT
X3001
4.43MHz
Q3010
Q3009
Q3011
Q3012
HEAD AMP CBA
IC3501 HEAD AMP
ENV
DET
PB ON
REC OFF
AGC
DET
CN3501
CN3001
V-ENV
RF-SW
Y-PB
C-PB
Y/C REC
DECK
VIDEO
L HEAD
VIDEO
R HEAD
CN3502
V (L)
COM
V (R)
D-PB+5V
D-REC+5V
TO POWER
SUPPLY BLOCK
LP-H
ROTA
TO SERVO/SYSTEM
CONTROL BLOCK

Audio Block Diagram


PB-AUDIO SINNAL
REC-AUDIO SIGNAL
Mode : SP/REC
TP7501
A-OUT
TU7001
CONV-A
A-OUT
1
18
JK7501
A-OUT
A-OUT
A-IN
A-IN
1
3
2
6
IC7501
INPUT SELECT
12
14
13
SW CTL
9
10
TO SERVO/SYSTEM
CONTROL BLOCK
INSEL 1
IC4001 AUDIO
ALC
DET
ALC
REC
PB
MUTE
LINE
PB-ON
EQ
REC-ON
REC LP/SLP
PB SLP ON
REC
OFF
AUTO
BIAS
REC-ON
REC-OFF
Q4004
LP-H
A-MUTE-H
D-PB-L
D-REC-H
TO
SERVO/SYSTEM
CONTROL BLOCK
T4001
Q4001
BIAS
OSC
BLOCK DIAGRAM FOR SECTION 2 (DECK MECHANISM)
DECK
AUDIO
HEAD
AUDIO
ERASE
HEAD
FULL
ERASE
HEAD
ACE HEAD CBA
CN2903
1 A-COM
2 A-PB/REC
3 AE-H GND
4 AE-H
JOINT CBA
CL2902
CN2901
1 A-COM
2 A-PB/REC
3 AE-H GND
4 AE-H
CN6001
HEAD AMP
CBA
CN3503
CN3501
1 FE-H
2 FE-H GND
8 FE-H
9 FE-H GND
CN3001
MAIN CBA

Power Supply Block Diagram



CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE T1.6AH 250V FUSE.

AC1001
F1001
T1.6AH/250V
L1001
L1002
CHOKE COIL
D1001 - D1004
BRIDGE RECTIFIER
TP1001
HOT GND
T1001
Q1002
Q1001
1
4
8
6
9
10
11
12
13
14
15
16
Q1502
SW REG.
SW CTL/ ERR AMP
Q1501
Q1503
Q1505
SW/REG.
Q1506
Q1507
SW CTL
Q1504
IC1001
(ERROR VOLTAGE DET)
2
3
REG
IC1002
AL+40V
AL+12V
P-ON+10V
P-ON-L
AL-30V
D-PB-L
D-PB+12V
D-PB+5V
AL+5V
CONV. +5V
T+5V
F-1
F-2
D-REC+5V
D-REC-H
P-DOWN-L

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note: "CBA" is an abbreviation for "Circuit Board Assembly".

Notes:

1. Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to do these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.
2. To perform these alignment / confirmation procedures, make sure that the tracking control is set in the center position: Press both CHANNEL "UP" and "DOWN" buttons at the same time. (on VCR only)

Test Equipment Required

1. Oscilloscope: Dual-trace with 10:1 probe, V-Range: 0.001~50V/Div., F-Frange: AC~DC-20MHz
2. PAL Pattern Generator (color bar with 100% white)
3. AC Voltmeter (RMS)
4. Alignment Tape (F6-A, Blank Tape)
5. Spectrum Analyzer

1. Head Switching Position Adjustment

Purpose: To determine the Head Switching point during playback.

Symptom of Misadjustment: May cause Head Switching noise or vertical jitter in the picture.

Test Point	Adj. Point	Mode	Input
TP7502(V-OUT) TP6002(RF-SW) GND	VR6001 (Switching Point)	PLAY (SP)	----
Tape	**Measurement Equipment**	**Spec.**	
F6-A	Oscilloscope	6.5H±1H (412.7±60µs)	

Connections of Measurement Equipment

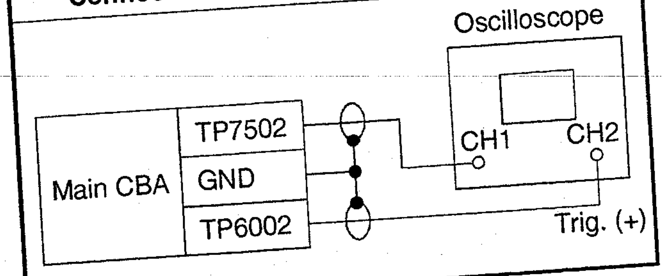
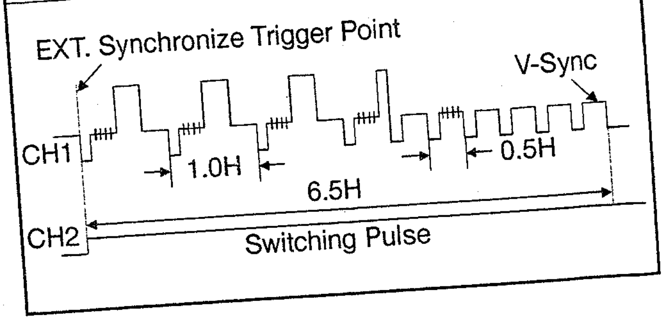


Figure 1



Reference Note:

TP6002; TP7502, VR6001: MAIN CBA

1. Play back the test tape and adjust VR6001 so that the V-sync front edge of the CH1 video output waveform is out the 6.5H(412.7µs) delayed position from the rising edge of the CH2 head switching pulse waveform.

2. V-Out Level Adjustment

Purpose: To set optimum luminance video out level.

Symptom of Misadjustment: If the video out level is too high, The TV may overload. If the level is too low, The S/N ratio deteriorates.

Test Point	Adj. Point	Mode	Input
TP7502 (V-OUT) GND	VR3003 (E-E LEVEL)	E-E	Color Bar Signal with 100% white
Tape	**Measurement Equipment**	**Spec.**	
----	Pattern Generator Oscilloscope	1±0.1Vp-p	

Connections of Measurement Equipment

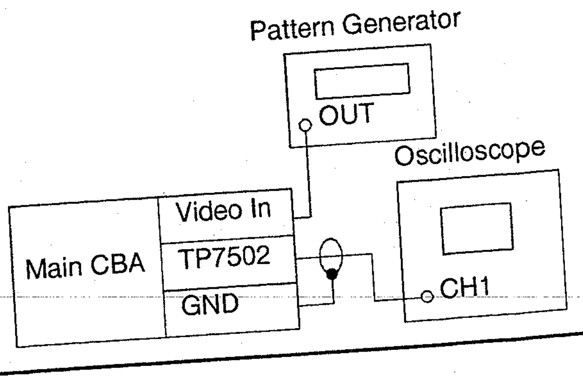
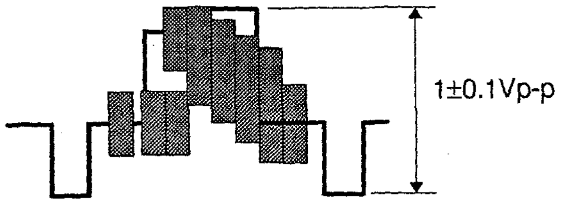


Figure 2



Reference Notes:

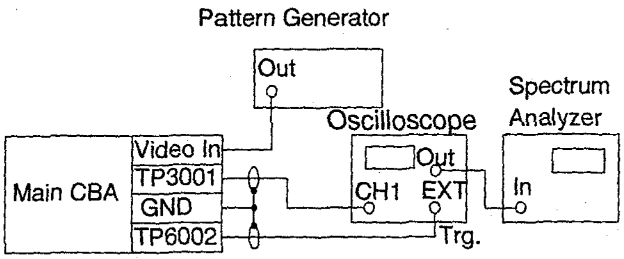
TP7502, VR3003 : MAIN CBA

1. Input the color bar signal with window 100% white to video input.
2. Adjust VR3003 so that the video level becomes 1±0.1Vp-p. (Connected to TV)

3. FM Carrier Deviation Adjustment

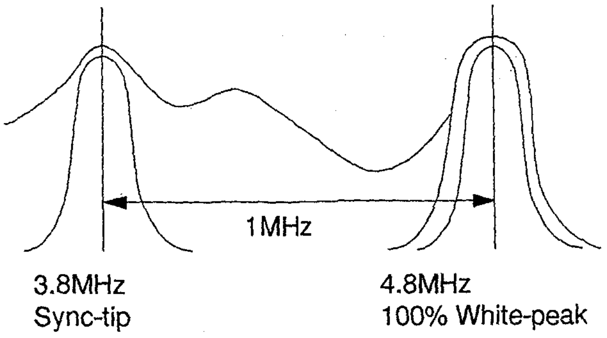
Purpose: To align FM carrier deviation.

Symptom of Misadjustment: If the deviation is not correct, abnormal contrast of light and dark on the picture may be seen.
If the carrier deviation is not correct, Beats appear on the picture.

Test Point	Adjustment Point	Mode	Input
TP3001 (Y-REC) TP6002 (RF-SW)	VR3001 (Deviation) VR3002 (Carrier)	REC. (SP)	Color Bar with 100% white
Tape	**Measurement Equipment**	**Spec.**	
Blank Tape	Frequency Counter	Sync-tip 3.8±0.1MHz 100%white peak 4.8±0.1MHz	
Connections of Measurement Equipment			
			

Pattern Generator
Out
Oscilloscope
Spectrum Analyzer
Main CBA
Video In
TP3001
GND
TP6002
Out
CH1
EXT
Trg.
In

Figure 3



Reference Notes:

TP3001, TP6002, VR3001, VR3002 : MAIN CBA

Reference Notes:

1. Input color bar signal with 100% white to video input.
2. Adjust Sync-tip to 3.8MHz± 0.1MHz by VR3001, White-peak for 4.8MHz±0.1MHz by VR3002.

SCHEMATIC DIAGRAMS / CBA'S AND TEST POINTS

Standard Notes

WARNING

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark " ⚠ " in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 -80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Z)	+30 -80%	20°C	-10~+70°C

Note:

1 Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.

2 All resistance values are indicated in ohms ($K=10^3$, $M=10^6$).

3 Resistor wattages are 1/5W or 1/6W unless otherwise specified.

4 All capacitance values are indicated in μF ($P=10^{-6}\mu F$).

5 All voltages are DC voltages unless otherwise specified.

6 Electrical parts such as capacitors, connectors, diodes, IC's, transistors, resistors, switches, and fuses are identified by four digits. The first two digits are not shown for each component. In each block of the diagram, there is a note such as shown below to indicate these abbreviated two digits.

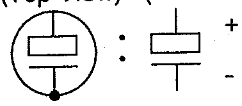
TUNER BLOCK SYMBOL NO. 70**

Example: "C08" in this "TUNER BLOCK" is C7008.

Capacitors and transistors are represented by the following symbols.

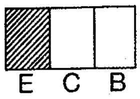
CBA Symbols

(Top View) (Bottom View)



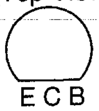
: Electrolytic Capacitor

(Bottom View)



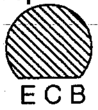
: Transistor or Digital Transistor

(Top View)



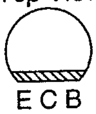
NPN Transistor

(Top View)



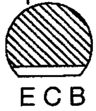
PNP Transistor

(Top View)



NPN Digital Transistor

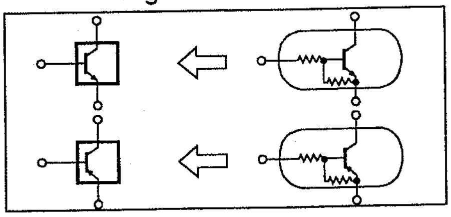
(Top View)



PNP Digital Transistor

Schematic Diagram Symbols

Digital Transistor



LIST OF CAUTION, NOTES, AND SYMBOLS USED IN THE SCHEMATIC DIAGRAMS ON THE FOLLOWING PAGES:

1. **CAUTION:**
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.

2. **CAUTION:**
Voltage selectable power supply circuit is used in this unit.
If Main Fuse (F01) is blown, first check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.

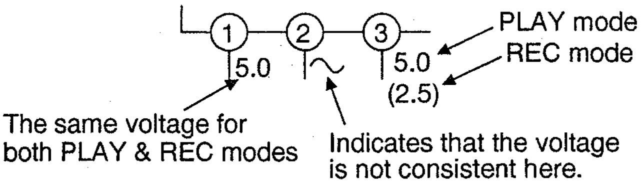
3. **Note:**
(1)Do not use the part number shown on the drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since the drawings were prepared.
(2)To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Wire Connectors
(1)Prefix symbol "CN" means "connector." (Can disconnect and reconnect)
(2)Prefix symbol "CL" means "wire-solder holes of the PCB." (Wire is soldered directly.)

5. Note: Mark "•" is a leadless (chip) component.

6. Mode: SP/REC

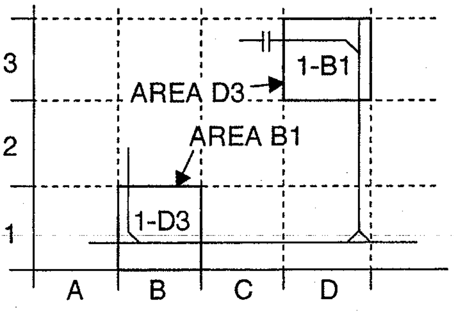
7. Voltage indications for PLAY and REC modes on the Schematics are as shown below:


①
②
③
5.0
5.0
(2.5)
PLAY mode
REC mode
The same voltage for both PLAY & REC modes
Indicates that the voltage is not consistent here.

Unit: Volts

8. How to read converged lines

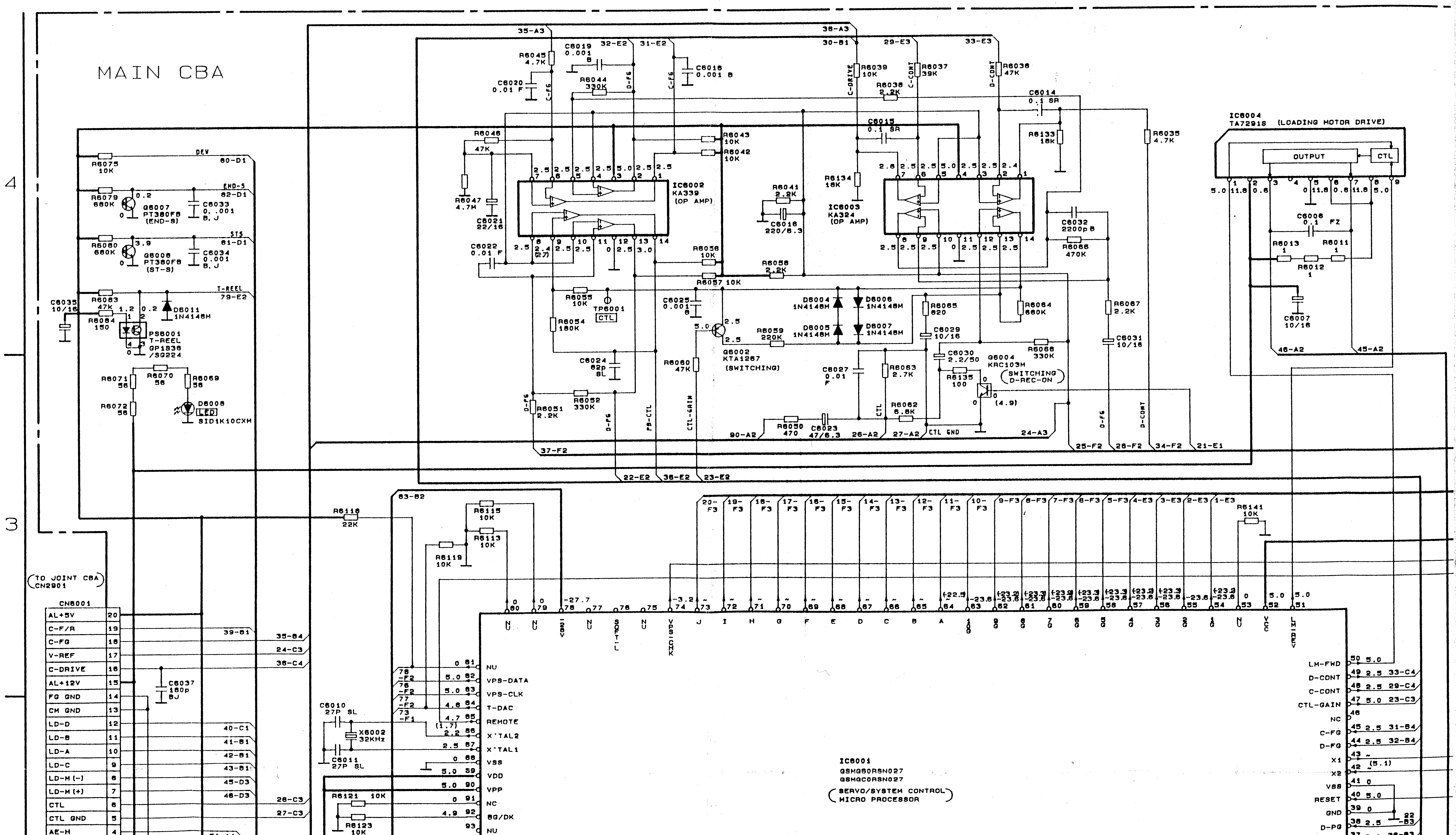
1-D3
Distinction Area
Line Number
(1 to 3 digits)
Examples:
1. "1-D3" means that line number "1" goes to area "D3".
2. "1-B1" means that line number "1" goes to area "B1".



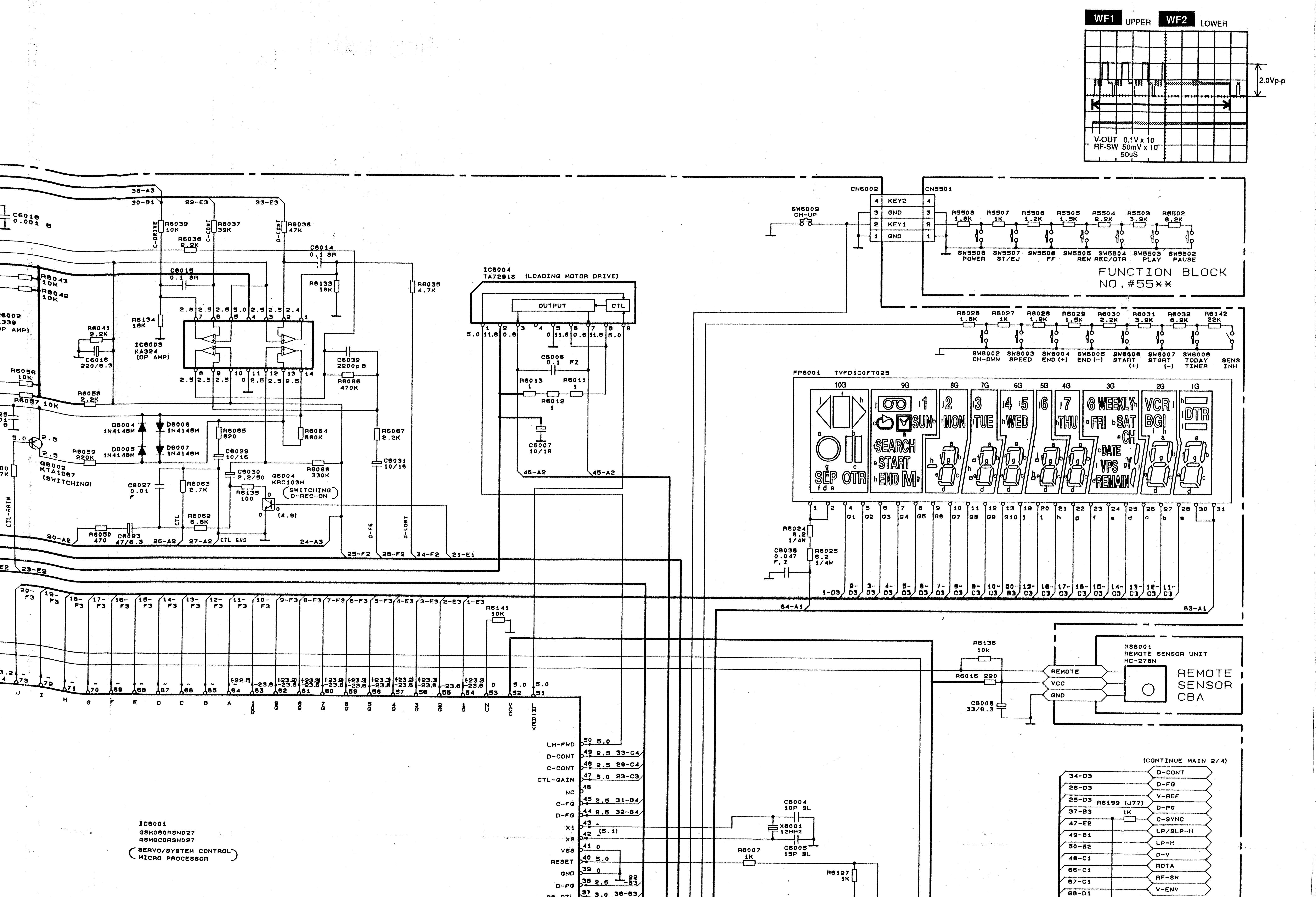
9. Test Point Information

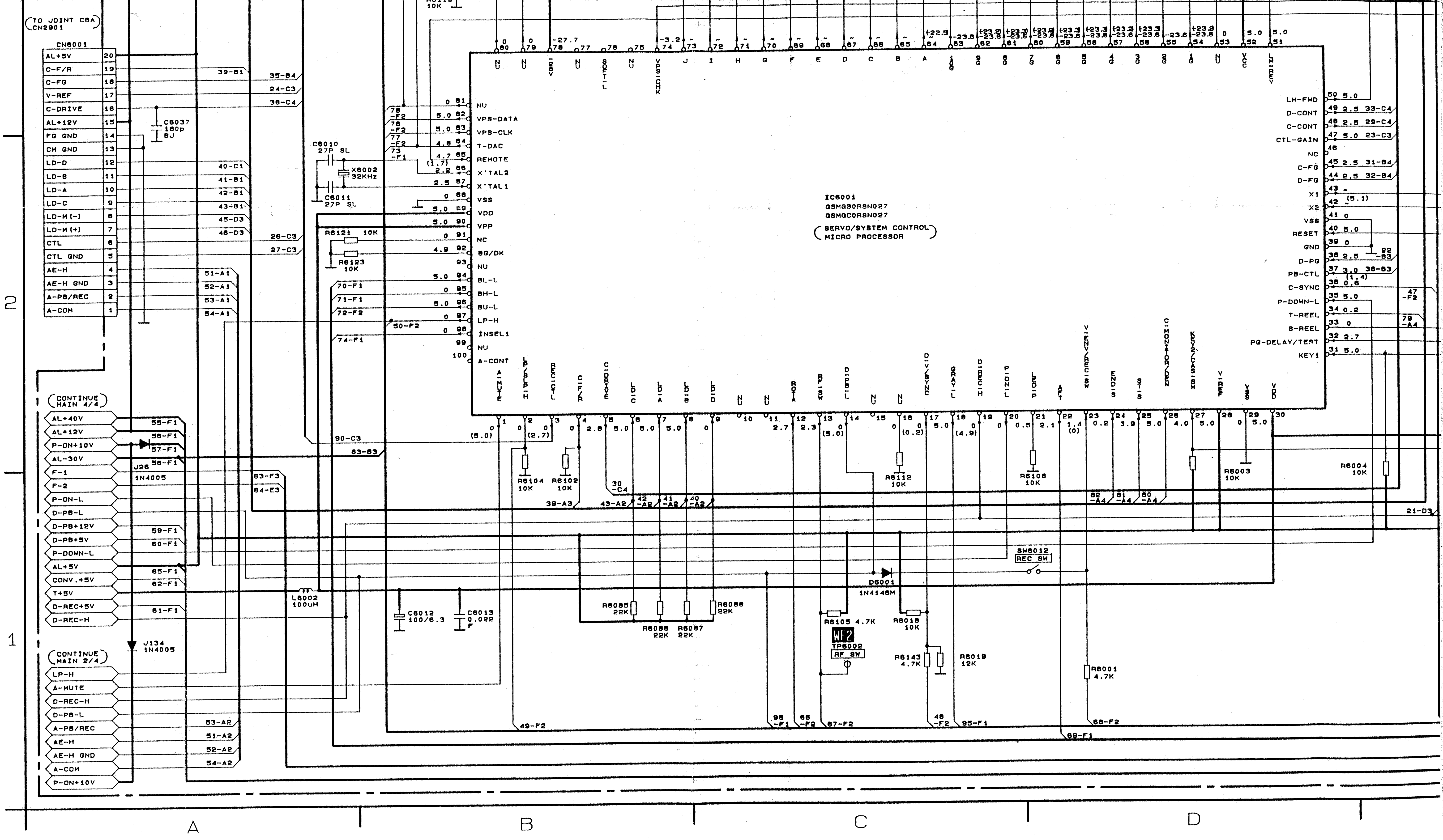
⦶ : Indicates a test point with a jumper wire across a hole in the PCB.
▭→ : Used to indicate a test point with a component lead on foil side.
▨ : Used to indicate a test point with no test pin.
● : Used to indicate a test point with a test pin.

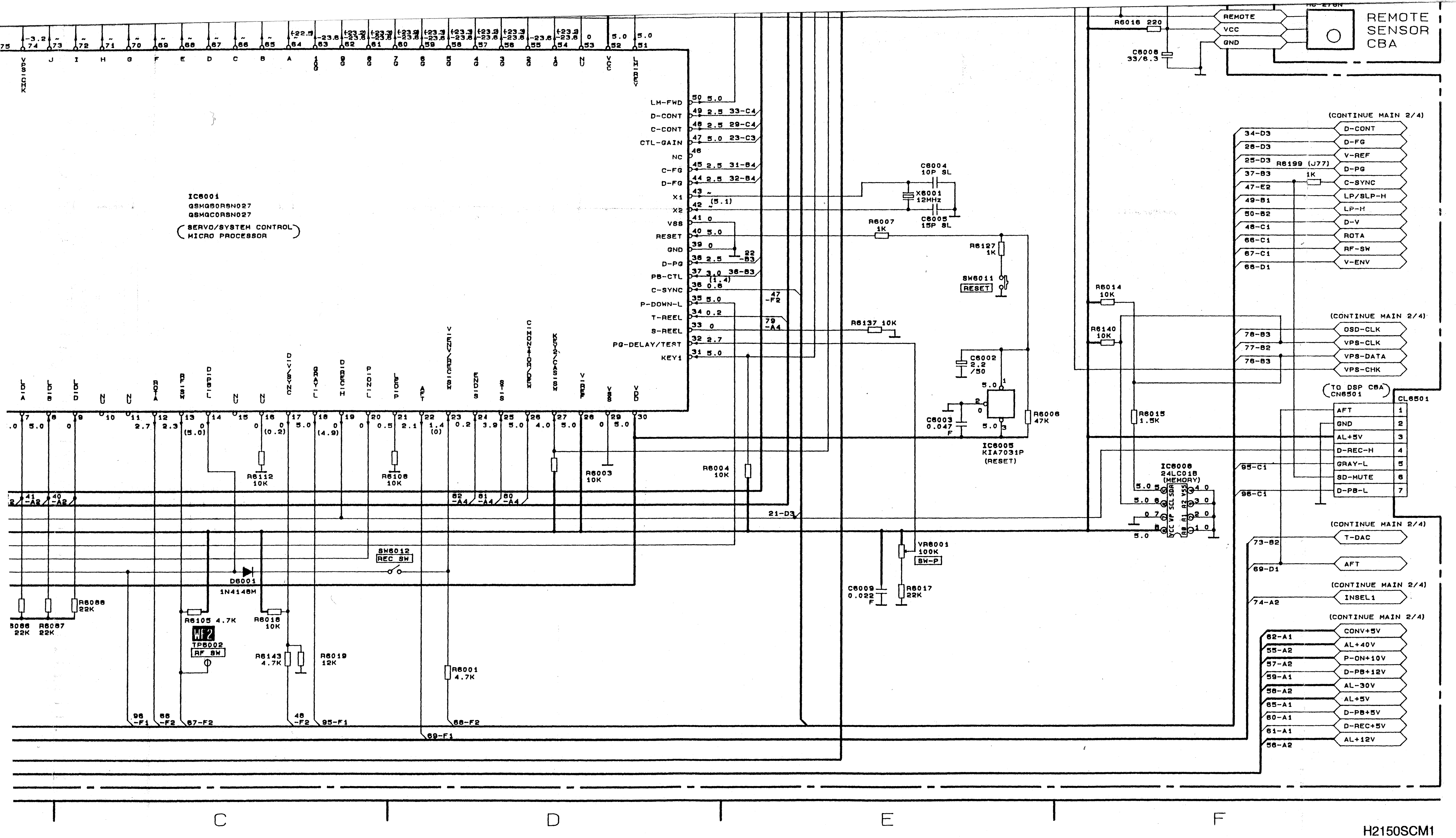
Main 1/4 Schematic Diagram



MAIN CBA
4
3
IC6002 KA339 (OP AMP)
IC6003 KA324 (OP AMP)
IC6004 TA7291S (LOADING MOTOR DRIVE)
OUTPUT
CTL
IC6001 QSMQ80RSN027 QSMQC0RSN027 (SERVO/SYSTEM CONTROL MICRO PROCESSOR)
(TO JOINT CBA CN2901)
CN6001
AL+5V
C-F/R
C-FG
V-REF
C-DRIVE
AL+12V
FG GND
CM GND
LD-D
LD-B
LD-A
LD-C
LD-M (-)
LD-M (+)
CTL
CTL GND
AE-H
Q6007 PT380F8 (END-S)
Q6008 PT380F8 (ST-S)
PS6001 T-REEL GP1S38 /SG224
D6008 LED SID1K10CXM
D6011 1N4148M
D6004 1N4148M
D6005 1N4148M
D6006 1N4148M
D6007 1N4148M
Q6002 KTA1267 (SWITCHING)
Q6004 KRC103M (SWITCHING D-REC-ON)
X6002 32KHz
TP6001 CTL
R6045 4.7K
R6044 330K
R6046 47K
R6047 4.7M
R6043 10K
R6042 10K
R6041 2.2K
R6039 10K
R6037 39K
R6036 47K
R6038 2.2K
R6134 18K
R6133 18K
R6035 4.7K
R6056 10K
R6058 2.2K
R6057 10K
R6055 10K
R6054 180K
R6052 330K
R6051 2.2K
R6059 220K
R6060 47K
R6065 820
R6064 680K
R6067 2.2K
R6066 470K
R6068 330K
R6063 2.7K
R6135 100
R6062 6.8K
R6050 470
R6013 1
R6012 1
R6011 1
R6075 10K
R6079 680K
R6080 680K
R6083 47K
R6084 150
R6071 56
R6070 56
R6069 56
R6072 56
R6118 22K
R6115 10K
R6113 10K
R6119 10K
R6121 10K
R6123 10K
R6141 10K
C6019 0.001 B
C6020 0.01 F
C6016 0.001 B
C6014 0.1 SR
C6015 0.1 SR
C6021 22/16
C6022 0.01 F
C6018 220/6.3
C6032 2200p B
C6006 0.1 FZ
C6007 10/16
C6033 0.001 B, J
C6034 0.001 B, J
C6035 10/16
C6025 0.001 B
C6024 82p SL
C6029 10/16
C6030 2.2/50
C6027 0.01 F
C6023 47/6.3
C6031 10/16
C6037 180p BJ
C6010 27P SL
C6011 27P SL
DEV 60-D1
END-S 62-D1
STS 61-D1
T-REEL 79-E2
35-A3
32-E2
31-E2
36-A3
30-B1
29-E3
33-E3
C-FG
D-FG
C-DRIVE
C-CONT
D-CONT
PB-CTL
CTL-GAIN
CTL GND
90-A2
26-A2
27-A2
24-A3
37-F2
22-E2
36-E2
23-E2
25-F2
28-F2
34-F2
21-E1
46-A2
45-A2
63-B2
39-B1
35-B4
24-C3
36-C4
40-C1
41-B1
42-B1
43-B1
45-D3
46-D3
26-C3
27-C3
20-F3
19-F3
18-F3
17-F3
16-F3
15-F3
14-F3
13-F3
12-F3
11-F3
10-F3
9-F3
8-F3
7-F3
6-F3
5-F3
4-E3
3-E3
2-E3
1-E3
NU
VPS-DATA
VPS-CLK
T-DAC
REMOTE
X'TAL2
X'TAL1
VSS
VDD
VPP
NC
BG/DK
LM-FWD
D-CONT
C-CONT
CTL-GAIN
NC
C-FG
D-FG
X1
X2
VSS
RESET
GND
D-PG
50 5.0
49 2.5 33-C4
48 2.5 29-C4
47 5.0 23-C3
45 2.5 31-B4
44 2.5 32-B4
41 0
40 5.0
39 0
38 2.5
22-B3

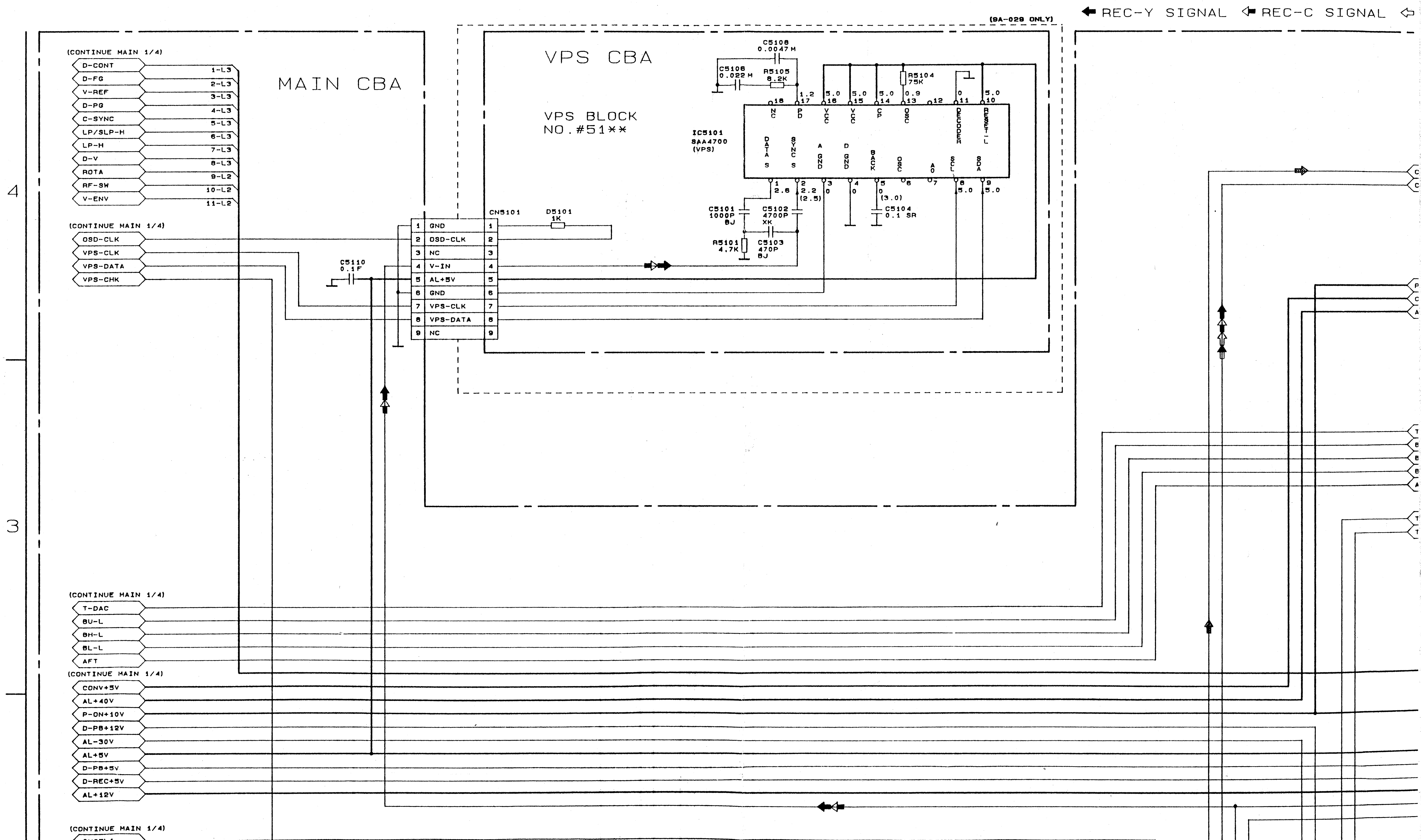

WF1 UPPER
WF2 LOWER
2.0Vp-p
V-OUT 0.1V x 10
RF-SW 50mV x 10
50uS
CN6002
CN5501
KEY2
GND
KEY1
GND
SW6009 CH-UP
R5508 1.8K
R5507 1K
R5506 1.2K
R5505 1.5K
R5504 2.2K
R5503 3.9K
R5502 8.2K
SW5508 POWER
SW5507 ST/EJ
SW5506 FF
SW5505 REW
SW5504 REC/OTR
SW5503 PLAY
SW5502 PAUSE
FUNCTION BLOCK
NO.#55**
IC6004 TA7291S (LOADING MOTOR DRIVE)
OUTPUT
CTL
C6006 0.1 FZ
R6013 1
R6011 1
R6012 1
C6007 10/16
46-A2
45-A2
R6026 1.8K
R6027 1K
R6028 1.2K
R6029 1.5K
R6030 2.2K
R6031 3.9K
R6032 8.2K
R6142 22K
SW6002 CH-DWN
SW6003 SPEED
SW6004 END (+)
SW6005 END (-)
SW6006 START (+)
SW6007 START (-)
SW6008 TODAY TIMER
SENS INH
FP6001 TVFD1C0FT025
10G 9G 8G 7G 6G 5G 4G 3G 2G 1G
SUN MON TUE WED THU FRI SAT WEEKLY
SEARCH START END
SLP OTR
CH DATE VPS REMAIN
VCR BGI DTR
R6024 6.2 1/4W
R6025 6.2 1/4W
C6036 0.047 F, Z
64-A1
63-A1
R6136 10k
R6016 220
C6008 33/6.3
RS6001 REMOTE SENSOR UNIT HC-278N
REMOTE
VCC
GND
REMOTE SENSOR CBA
(CONTINUE MAIN 2/4)
34-D3 D-CONT
28-D3 D-FG
25-D3 V-REF
R6199 (J77) 1K
D-PG
37-B3 C-SYNC
47-E2 LP/SLP-H
49-B1 LP-H
50-B2 D-V
48-C1 ROTA
66-C1 RF-SW
67-C1 V-ENV
68-D1
C6004 10P SL
X6001 12MHz
C6005 15P SL
R6007 1K
R6127 1K
R6141 10K
IC6001
QSMGB0RSN027
QSMGC0RSN027
(SERVO/SYSTEM CONTROL MICRO PROCESSOR)
LM-FWD
D-CONT
C-CONT
CTL-GAIN
NC
C-FG
D-FG
X1
X2
VSS
RESET
GND
D-PG
36-A3
30-B1
29-E3
33-E3
C6018 0.001 B
R6039 10K
R6037 39K
R6036 47K
C-DRIVE
C-CONT
D-CONT
R6038 2.2K
C6014 0.1 SR
C6015 0.1 SR
R6133 18K
R6035 4.7K
R6043 10K
R6042 10K
R6134 18K
IC6003 KA324 (OP AMP)
R6041 2.2K
C6016 220/6.3
C6032 2200p B
R6066 470K
R6056 10K
R6057 10K
R6058 2.2K
D6004 1N4148M
D6006 1N4148M
D6005 1N4148M
D6007 1N4148M
R6065 820
R6064 680K
R6067 2.2K
C6029 10/16
C6031 10/16
R6059 220K
Q6002 KTA1267 (SWITCHING)
C6030 2.2/50
Q6004 KRC103M (SWITCHING D-REC-ON)
R6068 330K
R6135 100
C6027 0.01 F
R6063 2.7K
R6062 6.8K
CTL-GAIN
R6050 470
C6023 47/6.3
90-A2
26-A2
27-A2
CTL GND
24-A3
25-F2
28-F2
34-F2
21-E1
23-E2
D-FG
D-CONT


TO JOINT CBA CN2901
CN6001
AL+5V 20
C-F/R 19
C-FG 18
V-REF 17
C-DRIVE 16
AL+12V 15
FG GND 14
CM GND 13
LD-D 12
LD-B 11
LD-A 10
LD-C 9
LD-M(-) 8
LD-M(+) 7
CTL 6
CTL GND 5
AE-H 4
AE-H GND 3
A-PB/REC 2
A-COM 1
C6037 180p SJ
C6010 27P SL
X6002 32KHz
C6011 27P SL
R6121 10K
R6123 10K
IC6001
GSMGB0RSN027
GSMGC0RSN027
SERVO/SYSTEM CONTROL MICRO PROCESSOR
NU
VPS-DATA
VPS-CLK
T-DAC
REMOTE
X'TAL2
X'TAL1
VSS
VDD
VPP
NC
BG/DK
BL-L
BH-L
BU-L
LP-H
INSEL1
A-CONT
LM-FWD
D-CONT
C-CONT
CTL-GAIN
C-FG
D-FG
X1
X2
RESET
GND
D-PG
PB-CTL
C-SYNC
P-DOWN-L
T-REEL
S-REEL
PG-DELAY/TEST
KEY1
A-MUTE
LP/SLP-H
REC-CTL
C-F/R
C-DRIVE
LD-C
LD-A
LD-B
LD-D
ROTA
RF-SW
D-PB-L
D-V-SYNC
GRAY-L
D-REC-H
P-ON-L
LED-P
AFT
V-ENV/REC-SW
END-S
S-S
C-MONITOR/DEW
KEY2/CASS-SW
V-REF
VSS
VDD
SOFT-L
VPS/CLK
12V
CONTINUE MAIN 4/4
AL+40V
AL+12V
P-ON+10V
AL-30V
F-1
F-2
P-ON-L
D-PB-L
D-PB+12V
D-PB+5V
P-DOWN-L
AL+5V
CONV.+5V
T+5V
D-REC+5V
D-REC-H
J26 1N4005
J134 1N4005
CONTINUE MAIN 2/4
LP-H
A-MUTE
D-REC-H
D-PB-L
A-PB/REC
AE-H
AE-H GND
A-COM
P-ON+10V
L6002 100uH
C6012 100/6.3
C6013 0.022 F
R6104 10K
R6102 10K
R6112 10K
R6108 10K
R6003 10K
R6004 10K
R6085 22K
R6086 22K
R6087 22K
R6088 22K
R6105 4.7K
TP6002 RF SW
WF2
D6001 1N4148M
R6018 10K
R6143 4.7K
R6019 12K
R6001 4.7K
SW6012 REC SW
A
B
C
D
1
2

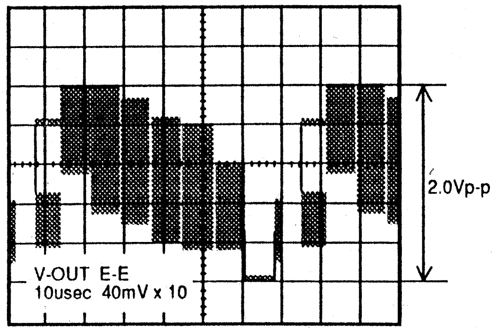

IC6001
QSMQ60RSN027
QSMQC0RSN027
SERVO/SYSTEM CONTROL MICRO PROCESSOR
LM-FWD
D-CONT
C-CONT
CTL-GAIN
NC
C-FG
D-FG
X1
X2
VSS
RESET
GND
D-PG
PB-CTL
C-SYNC
P-DOWN-L
T-REEL
S-REEL
PG-DELAY/TEST
KEY1
REMOTE
VCC
GND
REMOTE SENSOR CBA
R6016 220
C6008 33/6.3
C6004 10P SL
X6001 12MHz
C6005 15P SL
R6007 1K
R6127 1K
SW6011 RESET
R6137 10K
C6002 2.2 /50
C6003 0.047 F
IC6005 KIA7031P (RESET)
R6006 47K
R6014 10K
R6140 10K
R6015 1.5K
IC6006 24LC01B (MEMORY)
R6199 (J77) 1K
(CONTINUE MAIN 2/4)
D-CONT
D-FG
V-REF
D-PG
C-SYNC
LP/SLP-H
LP-H
D-V
ROTA
RF-SW
V-ENV
OSD-CLK
VPS-CLK
VPS-DATA
VPS-CHK
TO DSP CBA CN6501
CL6501
AFT
GND
AL+5V
D-REC-H
GRAY-L
SD-MUTE
D-PB-L
T-DAC
AFT
INSEL1
CONV+5V
AL+40V
P-ON+10V
D-PB+12V
AL-30V
AL+5V
D-PB+5V
D-REC+5V
AL+12V
R6112 10K
R6108 10K
R6003 10K
R6004 10K
SW6012 REC SW
D6001 1N4148M
R6088 22K
R6086 22K
R6087 22K
R6105 4.7K
WF2
TP6002 RF SW
R6018 10K
R6143 4.7K
R6019 12K
R6001 4.7K
VR6001 100K SW-P
C6009 0.022 F
R6017 22K
C
D
E
F

H2150SCM1

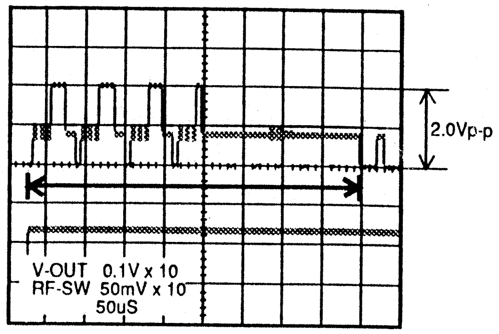
Main 2/4 Schematic Diagram


(9A-029 ONLY)
REC-Y SIGNAL
REC-C SIGNAL
4
3
MAIN CBA
VPS CBA
VPS BLOCK
NO.#51**
(CONTINUE MAIN 1/4)
D-CONT
D-FG
V-REF
D-PG
C-SYNC
LP/SLP-H
LP-H
D-V
ROTA
RF-SW
V-ENV
1-L3
2-L3
3-L3
4-L3
5-L3
6-L3
7-L3
8-L3
9-L2
10-L2
11-L2
(CONTINUE MAIN 1/4)
OSD-CLK
VPS-CLK
VPS-DATA
VPS-CHK
C5110
0.1 F
CN5101
1 GND 1
2 OSD-CLK 2
3 NC 3
4 V-IN 4
5 AL+5V 5
6 GND 6
7 VPS-CLK 7
8 VPS-DATA 8
9 NC 9
D5101
1K
C5108
0.0047 M
C5106
0.022 M
R5105
8.2K
R5104
75K
IC5101
SAA4700
(VPS)
1.2
5.0
5.0
5.0
0.9
0
5.0
18 NC
17 PD
16 VCC
15 VCC
14 CP
13 OSC
12
11 DECODER
10 RESET-L
1 DATA S
2 SYNC S
3 A GND
4 D GND
5 BACK
6 OSC
7 A0
8 SCL
9 SDA
2.6
2.2
(2.5)
0
0
0
(3.0)
5.0
5.0
C5101
1000P
BJ
C5102
4700P
XK
C5103
470P
BJ
R5101
4.7K
C5104
0.1 SR
(CONTINUE MAIN 1/4)
T-DAC
BU-L
BH-L
BL-L
AFT
(CONTINUE MAIN 1/4)
CONV+5V
AL+40V
P-ON+10V
D-PB+12V
AL-30V
AL+5V
D-PB+5V
D-REC+5V
AL+12V
(CONTINUE MAIN 1/4)

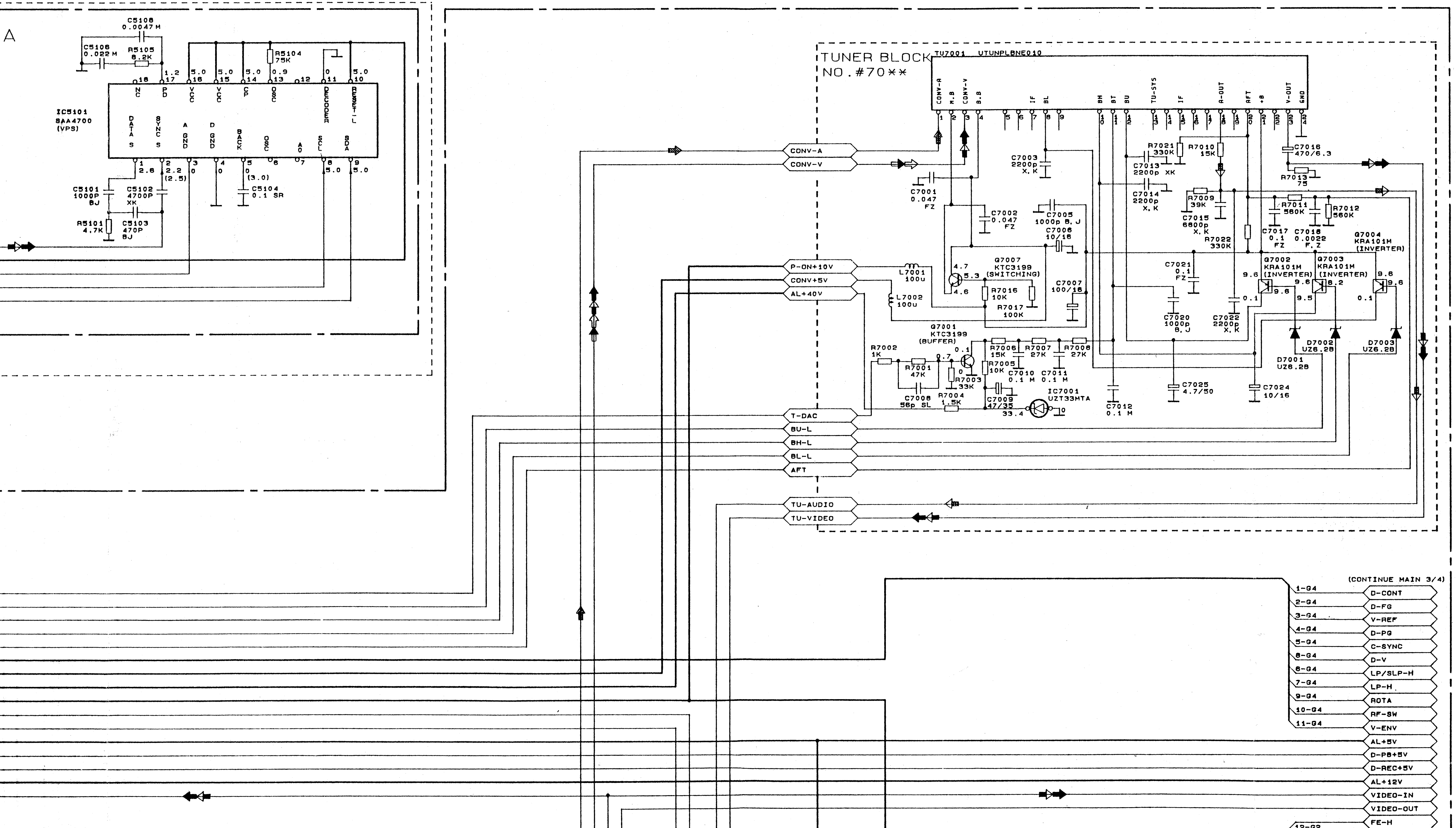
WF1

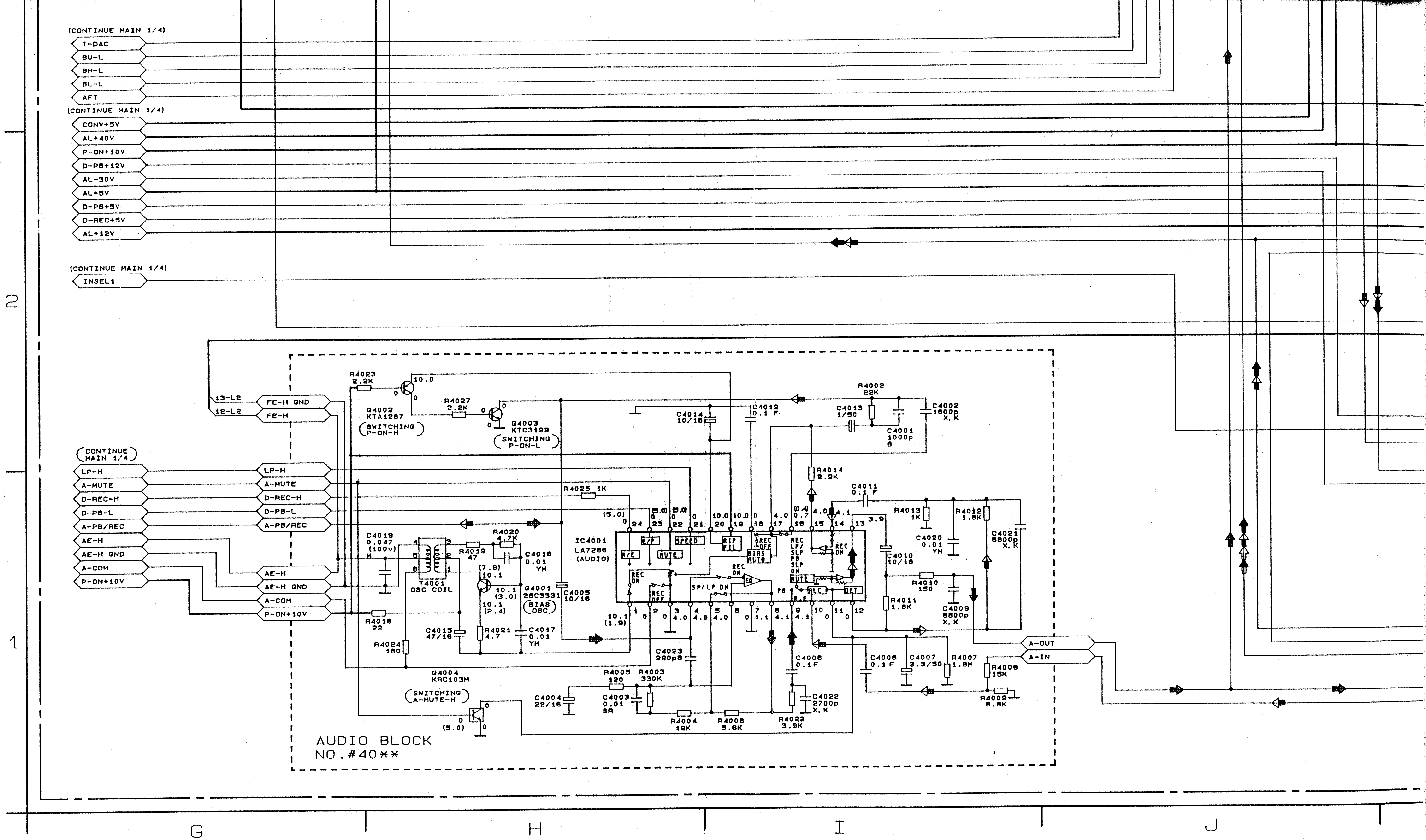


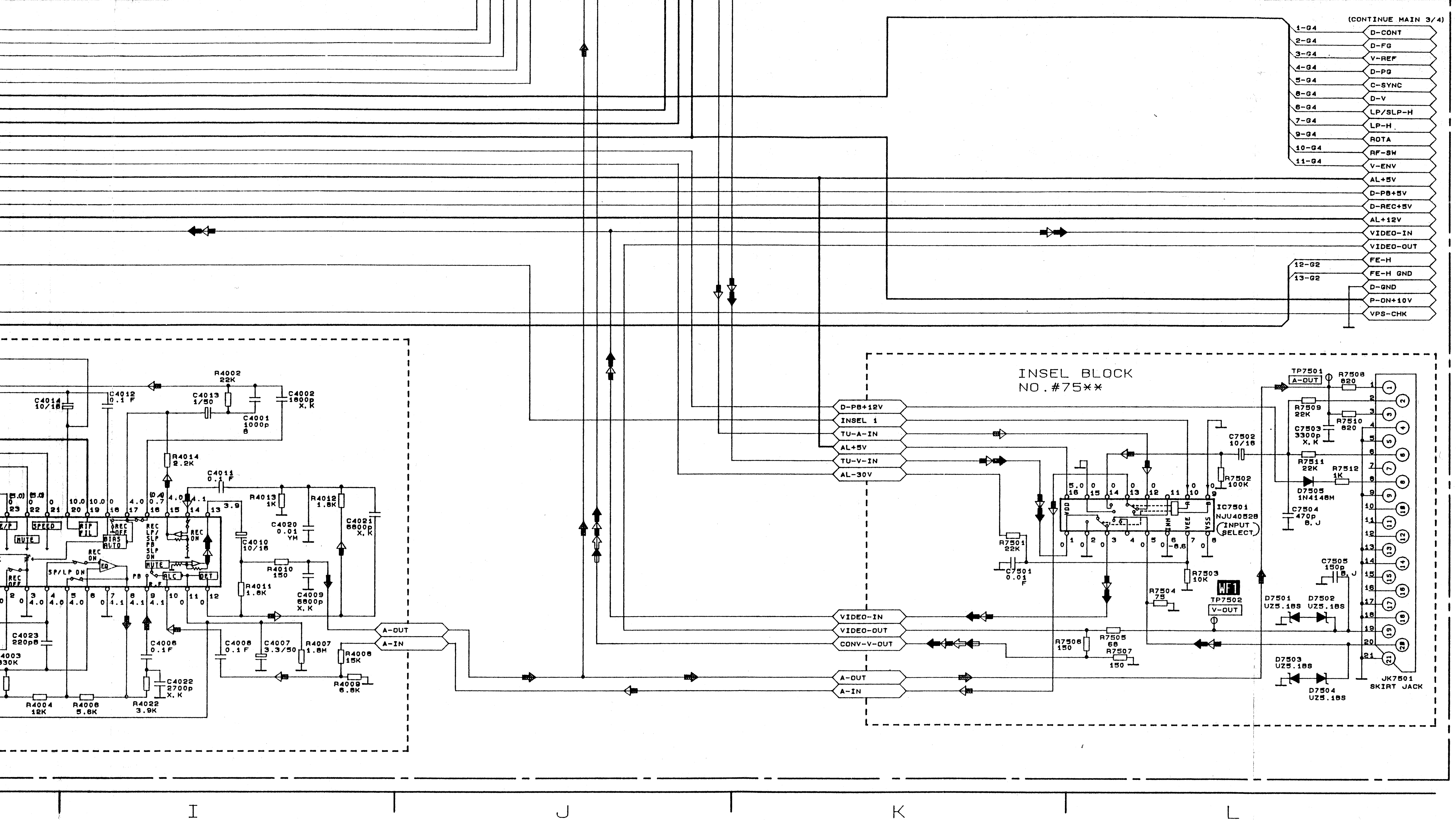
WF1 UPPER **WF2** LOWER



⬅ REC-Y SIGNAL ⇦ REC-C SIGNAL ⇦ PB-Y SIGNAL ⇦ PB-C SIGNAL ⇦ REC-A SIGNAL ⇦ PB-A SIGNAL

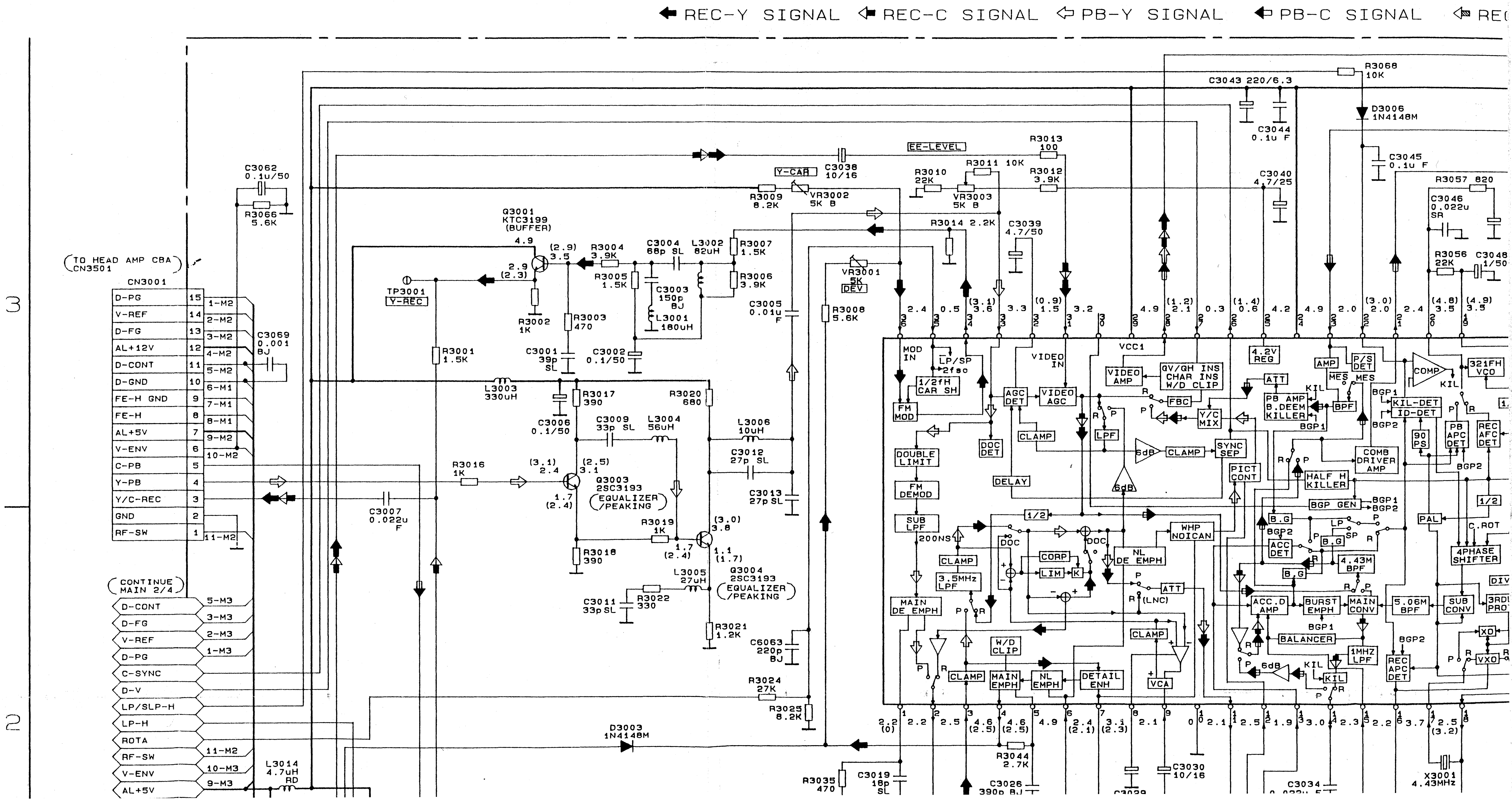

(9A-029 ONLY)
A
IC5101
SAA4700
(VPS)
C5108 0.0047 M
C5106 0.022 M
R5105 8.2K
R5104 75K
C5101 1000P SJ
C5102 4700P XK
R5101 4.7K
C5103 470P SJ
C5104 0.1 SR
NC
PD
VCC
VCC
CP
OSC
DECODER
RESET-L
DATA S
SYNC S
A GND
D GND
BACK
OSC
A0
SCL
SDA
TUNER BLOCK
NO.#70**
TU7001 UTUNPLBNE010
CONV-A
M.B
CONV-V
S.B
IF
BL
BH
BT
BU
TU-SYS
IF
A-OUT
AFT
+B
V-OUT
GND
C7001 0.047 FZ
C7002 0.047 FZ
C7003 2200p X, K
C7005 1000p B, J
C7006 10/16
C7007 100/16
C7008 56p SL
C7009 47/35
C7010 0.1 M
C7011 0.1 M
C7012 0.1 M
C7013 2200p XK
C7014 2200p X, K
C7015 6800p X, K
C7016 470/6.3
C7017 0.1 FZ
C7018 0.0022 F, Z
C7020 1000p B, J
C7021 0.1 FZ
C7022 2200p X, K
C7024 10/16
C7025 4.7/50
R7001 47K
R7002 1K
R7003 33K
R7004 1.5K
R7005 10K
R7006 15K
R7007 27K
R7008 27K
R7009 39K
R7010 15K
R7011 560K
R7012 560K
R7013 75
R7016 10K
R7017 100K
R7021 330K
R7022 330K
L7001 100u
L7002 100u
Q7001 KTC3199 (BUFFER)
Q7007 KTC3199 (SWITCHING)
Q7002 KRA101M (INVERTER)
Q7003 KRA101M (INVERTER)
Q7004 KRA101M (INVERTER)
IC7001 UZT33MTA
D7001 UZ6.2B
D7002 UZ6.2B
D7003 UZ6.2B
CONV-A
CONV-V
P-ON+10V
CONV+5V
AL+40V
T-DAC
BU-L
BH-L
BL-L
AFT
TU-AUDIO
TU-VIDEO
(CONTINUE MAIN 3/4)
1-G4
2-G4
3-G4
4-G4
5-G4
6-G4
6-G4
7-G4
9-G4
10-G4
11-G4
12-G3
D-CONT
D-FG
V-REF
D-PG
C-SYNC
D-V
LP/SLP-H
LP-H
ROTA
RF-SW
V-ENV
AL+5V
D-PB+5V
D-REC+5V
AL+12V
VIDEO-IN
VIDEO-OUT
FE-H


(CONTINUE MAIN 1/4)
T-DAC
BU-L
BH-L
BL-L
AFT
(CONTINUE MAIN 1/4)
CONV+5V
AL+40V
P-ON+10V
D-PB+12V
AL-30V
AL+5V
D-PB+5V
D-REC+5V
AL+12V
(CONTINUE MAIN 1/4)
INSEL1
13-L2
12-L2
FE-H GND
FE-H
(CONTINUE MAIN 1/4)
LP-H
A-MUTE
D-REC-H
D-PB-L
A-PB/REC
AE-H
AE-H GND
A-COM
P-ON+10V
R4023 2.2K
Q4002 KTA1267
(SWITCHING P-ON-H)
R4027 2.2K
Q4003 KTC3199
(SWITCHING P-ON-L)
C4014 10/16
C4012 0.1 F
C4013 1/50
R4002 22K
C4002 1800p X, K
C4001 1000p B
R4014 2.2K
C4011 0.1 F
R4013 1K
R4012 1.8K
C4020 0.01 YM
C4021 6800p X, K
C4010 10/16
R4010 150
R4011 1.8K
C4009 6800p X, K
R4025 1K
C4019 0.047 (100V)
T4001 OSC COIL
R4020 4.7K
R4019 47
C4018 0.01 YM
Q4001 2SC3331 (BIAS OSC)
C4005 10/16
IC4001 LA7286 (AUDIO)
R/E
E/P
MUTE
SPEED
RIP FIL
REC OFF
BIAS AUTO
REC LP/SLP PB SLP ON
REC ON
MUTE
ALC
DET
REC ON
REC OFF
SP/LP ON
REC ON
EQ
PB
R.F
R4018 22
R4024 180
C4015 47/16
R4021 4.7
C4017 0.01 YM
C4023 220pB
Q4004 KRC103M
(SWITCHING A-MUTE-H)
R4005 120
R4003 330K
C4004 22/16
C4003 0.01 SR
R4004 12K
R4006 5.6K
R4022 3.9K
C4006 0.1F
C4022 2700p X, K
C4008 0.1 F
C4007 3.3/50
R4007 1.8M
R4008 15K
R4009 6.8K
A-OUT
A-IN
AUDIO BLOCK
NO.#40**
G
H
I
J
1
2

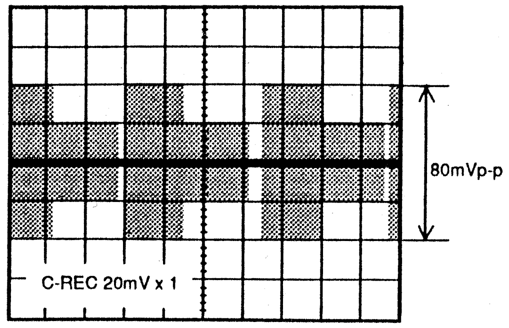

(CONTINUE MAIN 3/4)
1-G4
2-G4
3-G4
4-G4
5-G4
6-G4
6-G4
7-G4
9-G4
10-G4
11-G4
12-G2
13-G2
D-CONT
D-FG
V-REF
D-PG
C-SYNC
D-V
LP/SLP-H
LP-H
ROTA
RF-SW
V-ENV
AL+5V
D-PB+5V
D-REC+5V
AL+12V
VIDEO-IN
VIDEO-OUT
FE-H
FE-H GND
D-GND
P-ON+10V
VPS-CHK
INSEL BLOCK
NO.#75**
D-PB+12V
INSEL 1
TU-A-IN
AL+5V
TU-V-IN
AL-30V
VIDEO-IN
VIDEO-OUT
CONV-V-OUT
A-OUT
A-IN
A-OUT
A-IN
TP7501
A-OUT
TP7502
V-OUT
WF1
R7508 820
R7509 22K
R7510 820
C7503 3300p X, K
C7502 10/16
R7511 22K
R7512 1K
R7502 100K
D7505 1N4148M
C7504 470p B, J
IC7501
NJU4052B
INPUT SELECT
VDD
INH
VEE
VSS
R7501 22K
C7501 0.01 F
R7503 10K
R7504 75
R7505 68
R7506 150
R7507 150
C7505 150p B, J
D7501 UZ5.1BS
D7502 UZ5.1BS
D7503 UZ5.1BS
D7504 UZ5.1BS
JK7501
SKIRT JACK
R4002 22K
C4012 0.1 F
C4013 1/50
C4002 1800p X, K
C4001 1000p B
C4014 10/16
R4014 2.2K
C4011 0.1 F
R4013 1K
R4012 1.8K
C4021 6800p X, K
C4020 0.01 YM
C4010 10/16
R4010 150
R4011 1.8K
C4009 6800p X, K
C4023 220pB
R4003 330K
C4006 0.1F
C4022 2700p X, K
C4008 0.1 F
C4007 3.3/50
R4007 1.8M
R4008 15K
R4009 6.8K
R4004 12K
R4006 5.6K
R4022 3.9K
SPEED
MUTE
RIP FIL
REC OFF
BIAS AUTO
REC LP/SLP
PB SLP ON
MUTE
REC ON
EQ
SP/LP ON
REC OFF
ALC
DET
PB
R.F
I
J
K
L

H2150SCM2

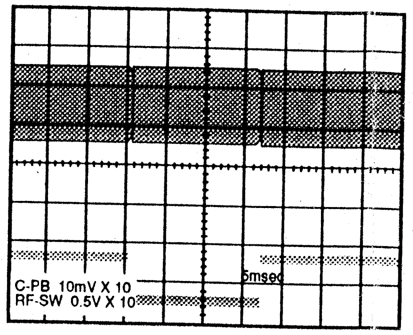
Main 3/4 Schematic Diagram


REC-Y SIGNAL
REC-C SIGNAL
PB-Y SIGNAL
PB-C SIGNAL
RE
3
2
TO HEAD AMP CBA CN3501
CN3001
D-PG 15 1-M2
V-REF 14 2-M2
D-FG 13 3-M2
AL+12V 12 4-M2
D-CONT 11 5-M2
D-GND 10 6-M1
FE-H GND 9 7-M1
FE-H 8 8-M1
AL+5V 7 9-M2
V-ENV 6 10-M2
C-PB 5
Y-PB 4
Y/C-REC 3
GND 2
RF-SW 1 11-M2
CONTINUE MAIN 2/4
D-CONT 5-M3
D-FG 3-M3
V-REF 2-M3
D-PG 1-M3
C-SYNC
D-V
LP/SLP-H
LP-H
ROTA
RF-SW 11-M2
V-ENV 10-M3
AL+5V 9-M3
C3062 0.1u/50
R3066 5.6K
C3069 0.001 BJ
TP3001 Y-REC
R3001 1.5K
Q3001 KTC3199 (BUFFER)
4.9
2.9 (2.3)
(2.9) 3.5
R3002 1K
R3003 470
R3004 3.9K
R3005 1.5K
C3004 68p SL
L3002 82uH
C3003 150p BJ
L3001 180uH
R3007 1.5K
R3006 3.9K
C3005 0.01u F
C3001 39p SL
C3002 0.1/50
L3003 330uH
R3017 390
C3006 0.1/50
R3020 680
C3009 33p SL
L3004 56uH
L3006 10uH
C3012 27p SL
C3013 27p SL
R3016 1K
(3.1) 2.4
(2.5) 3.1
1.7 (2.4)
Q3003 2SC3193 (EQUALIZER /PEAKING)
R3019 1K
(3.0) 3.8
1.7 (2.4)
1.1 (1.7)
R3018 390
C3007 0.022u F
L3005 27uH
Q3004 2SC3193 (EQUALIZER /PEAKING)
C3011 33p SL
R3022 330
R3021 1.2K
C6063 220p BJ
R3024 27K
R3025 8.2K
D3003 1N4148M
L3014 4.7uH RD
R3035 470
C3019 18p SL
C3026 390p BJ
R3044 2.7K
C3029
C3030 10/16
C3034
Y-CAR
C3038 10/16
R3009 8.2K
VR3002 5K B
EE-LEVEL
R3010 22K
R3011 10K
VR3003 5K B
R3013 100
R3012 3.9K
R3014 2.2K
C3039 4.7/50
VR3001 5K DEV
R3008 5.6K
C3043 220/6.3
C3044 0.1u F
C3040 4.7/25
R3068 10K
D3006 1N4148M
C3045 0.1u F
R3057 820
C3046 0.022u SR
R3056 22K
C3048 1/50
2.4 0.5 (3.1) 3.6 3.3 (0.9) 1.5 3.2 4.9 (1.2) 2.1 0.3 (1.4) 0.6 4.2 4.9 2.0 (3.0) 2.0 2.4 (4.8) 3.5 (4.9) 3.5
MOD IN
LP/SP 2fsc
1/2fH CAR SH
FM MOD
AGC DET
VIDEO AGC
VIDEO IN
VCC1
VIDEO AMP
QV/QH INS CHAR INS W/D CLIP
FBC
4.2V REG
ATT
PB AMP B.DEEM KILLER
AMP
P/S DET
MES
MES
KIL
BPF
BGP1
COMP
KIL
321FH VCO
KIL-DET
ID-DET
BGP2
PB APC DET
REC AFC DET
90 PS
DOUBLE LIMIT
DOC DET
CLAMP
LPF
6dB
CLAMP
SYNC SEP
Y/C MIX
COMB DRIVER AMP
HALF H KILLER
BGP2
PICT CONT
FM DEMOD
DELAY
6dB
BGP GEN
BGP1 BGP2
1/2
SUB LPF
200NS
1/2
DOC
DOC
WHP NDICAN
NL DE EMPH
B.G
BGP2
ACC DET
LP
SP
B.G
4.43M BPF
PAL
C.ROT
4PHASE SHIFTER
1/2
CLAMP
CORP
LIM
K
3.5MHz LPF
ATT
R (LNC)
MAIN DE EMPH
ACC.D AMP
BURST EMPH
MAIN CONV
5.06M BPF
SUB CONV
DIV
3RD PRO
BGP1
BALANCER
1MHZ LPF
BGP2
REC APC DET
XO
VXO
W/D CLIP
CLAMP
CLAMP
MAIN EMPH
NL EMPH
DETAIL ENH
VCA
6dB
KIL
KIL
2.2 (0) 2.2 2.5 4.6 (2.5) 4.6 (2.5) 4.9 2.4 (2.1) 3.1 (2.3) 2.1 0 2.1 2.5 1.9 3.0 2.3 2.2 3.7 2.5 (3.2)
X3001 4.43MHz

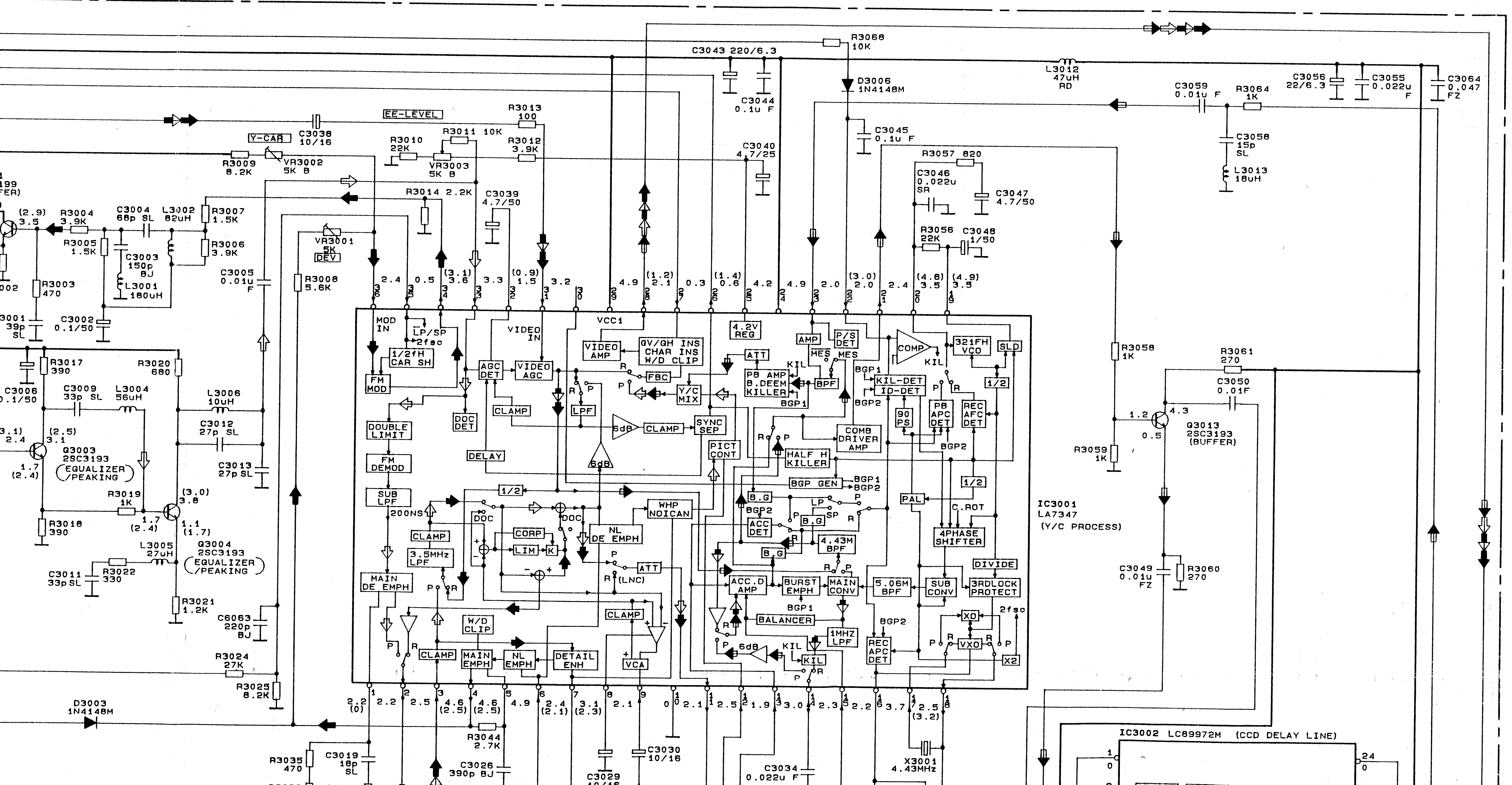
WF3



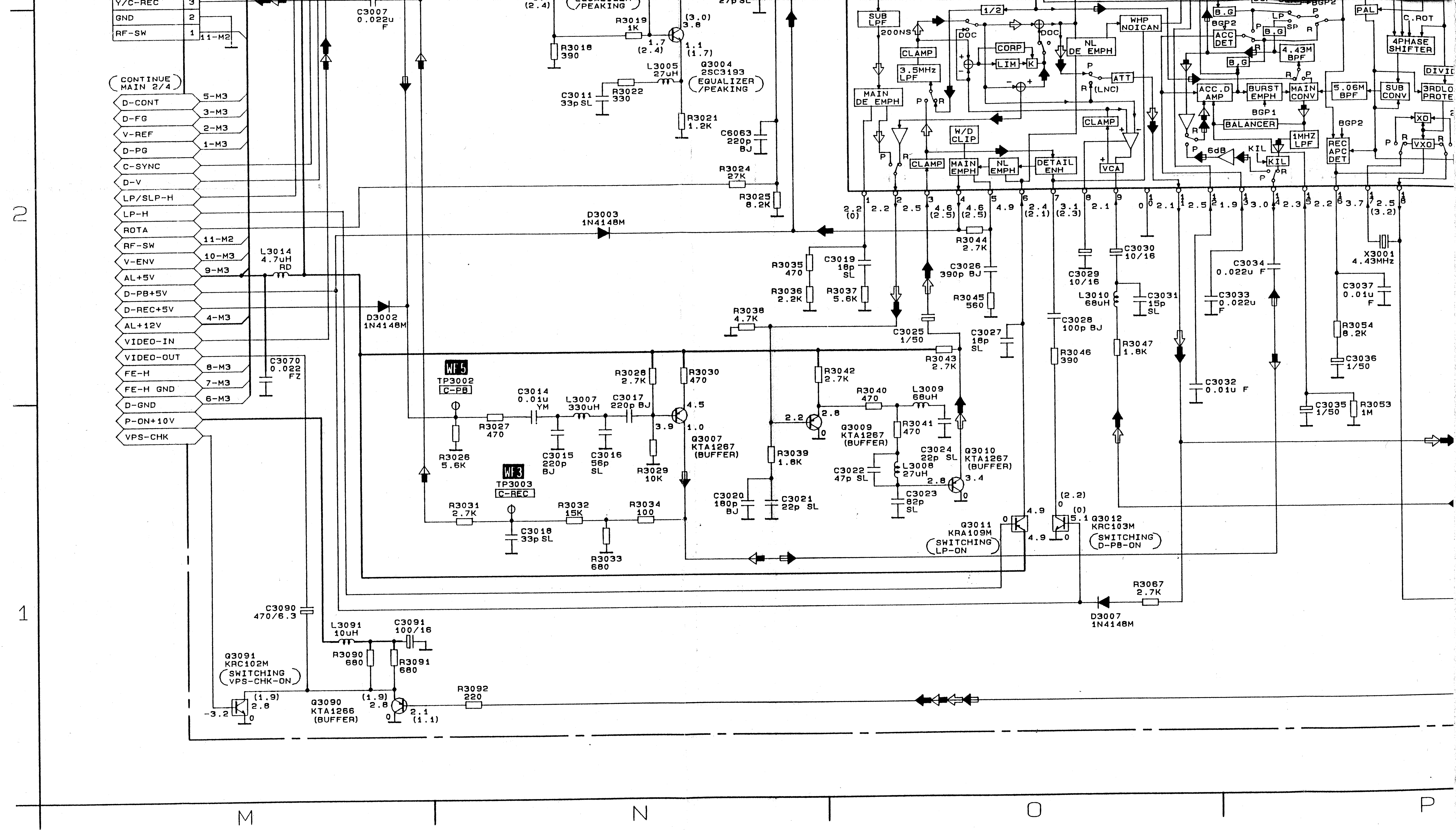
WF5

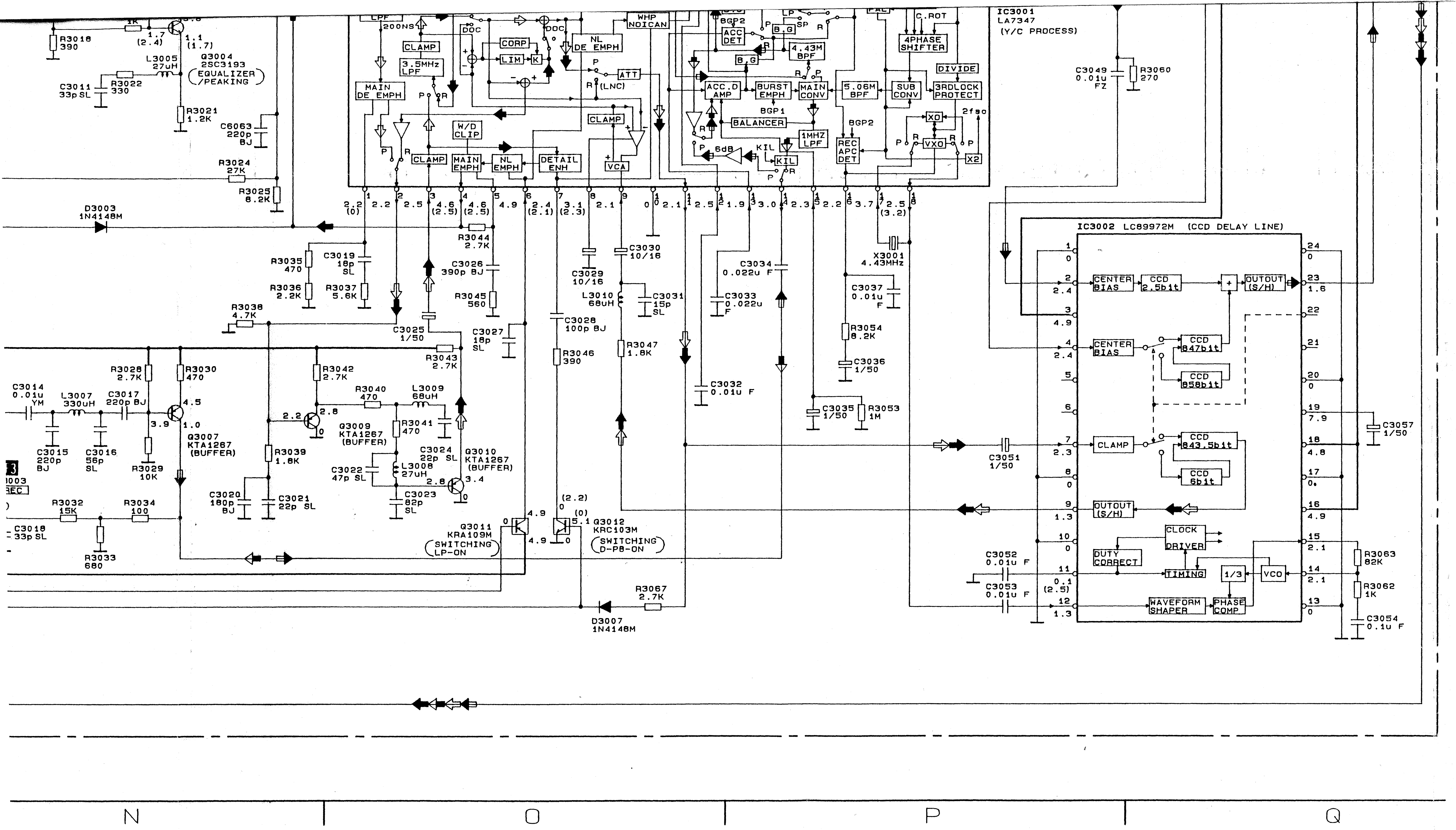


◀ REC-Y SIGNAL ◁ REC-C SIGNAL ⇦ PB-Y SIGNAL ⇦ PB-C SIGNAL ⇦ REC-A SIGNAL ⇦ PB-A SIGNAL MODE: SP/REC



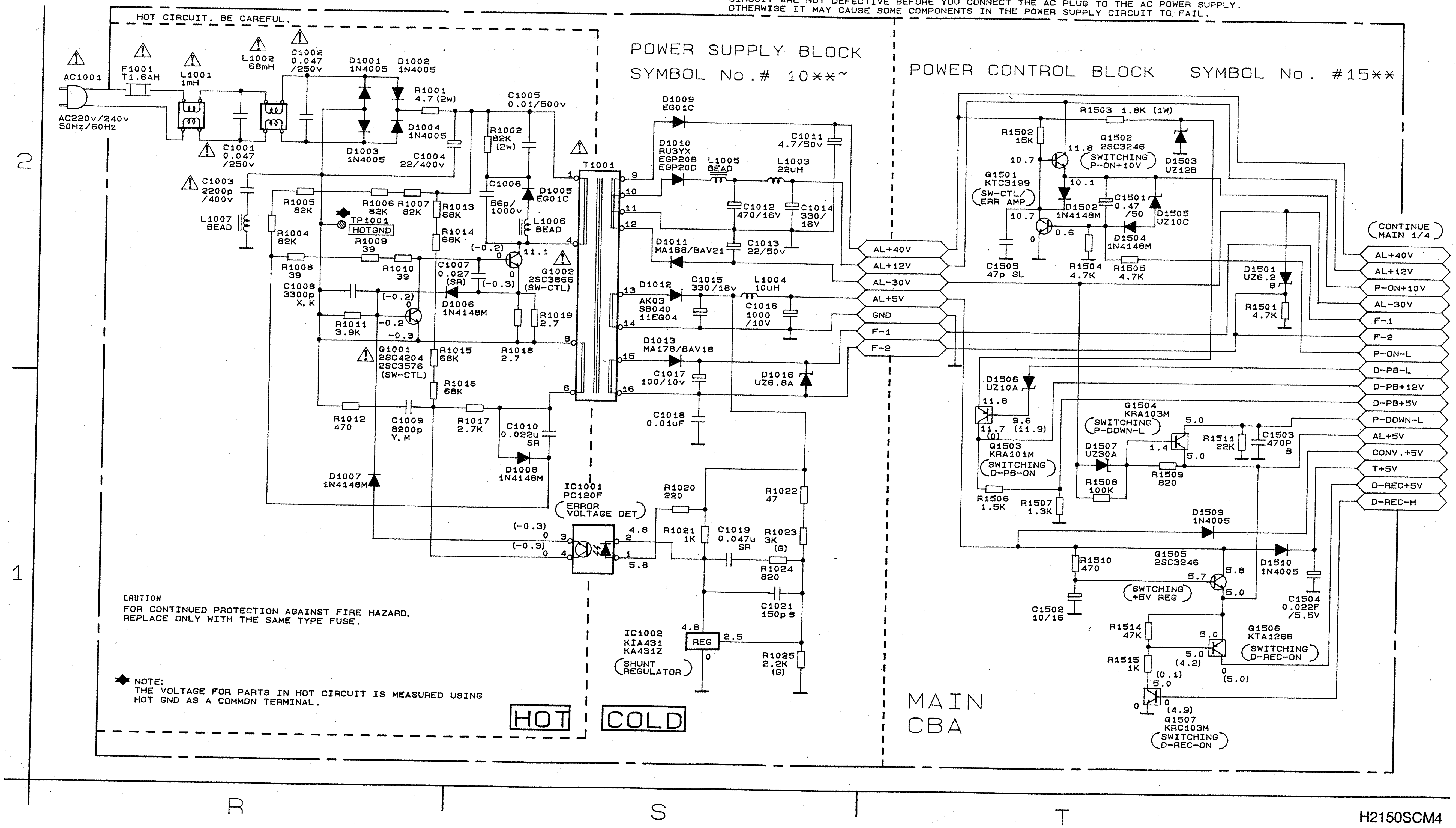
IC3001
LA7347
(Y/C PROCESS)
IC3002 LC89972M (CCD DELAY LINE)
Q3003
2SC3193
(EQUALIZER /PEAKING)
Q3004
2SC3193
(EQUALIZER /PEAKING)
Q3013
2SC3193
(BUFFER)
R3068 10K
C3043 220/6.3
C3044 0.1u F
D3006 1N4148M
L3012 47uH RD
C3056 22/6.3
C3055 0.022u F
C3064 0.047 FZ
C3059 0.01u F
R3064 1K
C3058 15p SL
L3013 18uH
C3045 0.1u F
C3040 4.7/25
R3057 820
C3046 0.022u SR
C3047 4.7/50
R3056 22K
C3048 1/50
R3058 1K
R3061 270
C3050 0.01F
R3059 1K
C3049 0.01u FZ
R3060 270
EE-LEVEL
Y-CAR
R3013 100
R3011 10K
R3010 22K
R3012 3.9K
VR3003 5K B
R3009 8.2K
VR3002 5K B
C3038 10/16
R3014 2.2K
C3039 4.7/50
R3004 3.9K
C3004 68p SL
L3002 82uH
R3007 1.5K
R3005 1.5K
C3003 150p BJ
L3001 180uH
R3006 3.9K
VR3001 5K DEV
R3008 5.6K
C3005 0.01u F
R3003 470
C3001 39p SL
C3002 0.1/50
R3017 390
R3020 680
C3006 0.1/50
C3009 33p SL
L3004 56uH
L3006 10uH
C3012 27p SL
C3013 27p SL
R3019 1K
R3018 390
L3005 27uH
C3011 33p SL
R3022 330
R3021 1.2K
C6063 220p BJ
R3024 27K
R3025 8.2K
D3003 1N4148M
R3044 2.7K
R3035 470
C3019 18p SL
C3026 390p BJ
C3029
C3030 10/16
C3034 0.022u F
X3001 4.43MHz
MOD IN
LP/SP
2fsc
1/2fH CAR SH
FM MOD
DOUBLE LIMIT
FM DEMOD
SUB LPF
200NS
CLAMP
3.5MHz LPF
MAIN DE EMPH
AGC DET
VIDEO AGC
VIDEO IN
DOC DET
DELAY
VCC1
VIDEO AMP
QV/QH INS CHAR INS W/D CLIP
FBC
Y/C MIX
LPF
6dB
SYNC SEP
PICT CONT
1/2
DOC
CORP
LIM
K
NL DE EMPH
WHP NOICAN
ATT
(LNC)
W/D CLIP
MAIN EMPH
NL EMPH
DETAIL ENH
VCA
4.2V REG
AMP
P/S DET
MES
PB AMP B.DEEM KILLER
KIL
BPF
COMP
321FH VCO
SLD
KIL-DET ID-DET
BGP1
BGP2
90 PS
PB APC DET
REC AFC DET
COMB DRIVER AMP
HALF H KILLER
BGP GEN
B.G
ACC DET
4.43M BPF
ACC.D AMP
BURST EMPH
MAIN CONV
5.06M BPF
SUB CONV
3RDLOCK PROTECT
DIVIDE
BALANCER
1MHZ LPF
REC APC DET
XO
VXO
X2
PAL
C.ROT
4PHASE SHIFTER


Y/C-REC 3
GND 2
RF-SW 1
11-M2
CONTINUE MAIN 2/4
D-CONT 5-M3
D-FG 3-M3
V-REF 2-M3
D-PG 1-M3
C-SYNC
D-V
LP/SLP-H
LP-H
ROTA
RF-SW 11-M2
V-ENV 10-M3
AL+5V 9-M3
D-PB+5V
D-REC+5V
AL+12V 4-M3
VIDEO-IN
VIDEO-OUT
FE-H 8-M3
FE-H GND 7-M3
D-GND 6-M3
P-ON+10V
VPS-CHK
C3007 0.022u F
/PEAKING
R3019 1K
(3.0) 3.8
1.7 (2.4)
1.1 (1.7)
R3018 390
L3005 27uH
Q3004 2SC3193
EQUALIZER /PEAKING
C3011 33p SL
R3022 330
R3021 1.2K
27p SL
C6063 220p BJ
R3024 27K
R3025 8.2K
D3003 1N4148M
L3014 4.7uH RD
D3002 1N4148M
C3070 0.022 FZ
WF5
TP3002 C-PB
R3026 5.6K
R3027 470
C3014 0.01u YM
L3007 330uH
C3017 220p BJ
C3015 220p BJ
C3016 56p SL
R3028 2.7K
R3030 470
4.5
3.9
1.0
R3029 10K
Q3007 KTA1267 (BUFFER)
WF3
TP3003 C-REC
R3031 2.7K
C3018 33p SL
R3032 15K
R3033 680
R3034 100
R3038 4.7K
R3039 1.8K
C3020 180p BJ
C3021 22p SL
R3042 2.7K
2.2
2.8
Q3009 KTA1267 (BUFFER)
R3040 470
L3009 68uH
R3041 470
C3024 22p SL
C3022 47p SL
L3008 27uH
C3023 82p SL
Q3010 KTA1267 (BUFFER)
3.4
R3043 2.7K
C3025 1/50
C3027 18p SL
Q3011 KRA109M
SWITCHING LP-ON
4.9
Q3012 KRC103M
SWITCHING D-PB-ON
(2.2) 0 (0) 5.1
R3035 470
R3036 2.2K
C3019 18p SL
R3037 5.6K
R3044 2.7K
C3026 390p BJ
R3045 560
C3028 100p BJ
R3046 390
C3029 10/16
C3030 10/16
L3010 68uH
C3031 15p SL
R3047 1.8K
C3034 0.022u F
C3033 0.022u F
C3032 0.01u F
C3035 1/50
R3053 1M
C3037 0.01u F
R3054 8.2K
C3036 1/50
X3001 4.43MHz
SUB LPF
200NS
CLAMP
3.5MHz LPF
MAIN DE EMPH
1/2
DOC
CORP
LIM
K
WHP NOICAN
NL DE EMPH
ATT
(LNC)
CLAMP
W/D CLIP
CLAMP
MAIN EMPH
NL EMPH
DETAIL ENH
VCA
B.G
BGP2
ACC DET
LP SP
4.43M BPF
ACC.D AMP
BURST EMPH
MAIN CONV
5.06M BPF
SUB CONV
BGP1
BALANCER
1MHZ LPF
6dB
KIL
REC APC DET
PAL
C.ROT
4PHASE SHIFTER
DIVID
3RDLO PROTE
XO
VXO
2.2 (0)
2.2
2.5
4.6 (2.5)
4.6 (2.5)
4.9
2.4 (2.1)
3.1 (2.3)
2.1
0
2.1
2.5
1.9
3.0
2.3
2.2
3.7
2.5 (3.2)
R3067 2.7K
D3007 1N4148M
C3090 470/6.3
L3091 10uH
C3091 100/16
R3090 680
R3091 680
Q3091 KRC102M
SWITCHING VPS-CHK-ON
(1.9) 2.8
-3.2
0
Q3090 KTA1266 (BUFFER)
(1.9) 2.8
2.1 (1.1)
R3092 220
2
1
M
N
O
P


IC3001
LA7347
(Y/C PROCESS)
IC3002 LC89972M (CCD DELAY LINE)
Q3004
2SC3193
(EQUALIZER/PEAKING)
Q3007
KTA1267
(BUFFER)
Q3009
KTA1267
(BUFFER)
Q3010
KTA1267
(BUFFER)
Q3011
KRA109M
(SWITCHING LP-ON)
Q3012
KRC103M
(SWITCHING D-P8-ON)
D3003
1N4148M
D3007
1N4148M
X3001
4.43MHz
R3018 390
L3005 27uH
C3011 33p SL
R3022 330
R3021 1.2K
C6063 220p BJ
R3024 27K
R3025 8.2K
R3035 470
C3019 18p SL
R3036 2.2K
R3037 5.6K
R3044 2.7K
C3026 390p BJ
R3045 560
R3038 4.7K
C3025 1/50
C3027 18p SL
R3043 2.7K
R3028 2.7K
R3030 470
R3042 2.7K
C3014 0.01u YM
L3007 330uH
C3017 220p BJ
R3040 470
L3009 68uH
R3041 470
C3015 220p BJ
C3016 56p SL
R3029 10K
R3039 1.8K
C3024 22p SL
C3022 47p SL
L3008 27uH
C3023 82p SL
C3020 180p BJ
C3021 22p SL
R3032 15K
R3034 100
R3033 680
C3018 33p SL
C3029 10/16
C3030 10/16
L3010 68uH
C3031 15p SL
C3028 100p BJ
R3046 390
R3047 1.8K
C3034 0.022u F
C3033 0.022u F
C3032 0.01u F
C3037 0.01u F
R3054 8.2K
C3036 1/50
C3035 1/50
R3053 1M
R3067 2.7K
C3049 0.01u FZ
R3060 270
C3051 1/50
C3052 0.01u F
C3053 0.01u F
C3057 1/50
R3063 82K
R3062 1K
C3054 0.1u F
LPF
200NS
CLAMP
3.5MHz LPF
MAIN DE EMPH
DOC
CORP
LIM
K
NL DE EMPH
WHP NOICAN
ATT
R (LNC)
W/D CLIP
CLAMP
MAIN EMPH
NL EMPH
DETAIL ENH
VCA
BGP2
ACC DET
B.G
LP
SP
4.43M BPF
ACC.D AMP
BURST EMPH
MAIN CONV
5.06M BPF
SUB CONV
C.ROT
4PHASE SHIFTER
DIVIDE
3RDLOCK PROTECT
BGP1
BALANCER
1MHZ LPF
6dB
KIL
REC APC DET
BGP2
XO
VXO
X2
2fsc
PAL
CENTER BIAS
CCD 2.5bit
OUTOUT (S/H)
CCD 847bit
CCD 858bit
CLAMP
CCD 843.5bit
CCD 6bit
OUTOUT (S/H)
CLOCK DRIVER
DUTY CORRECT
TIMING
1/3
VCO
WAVEFORM SHAPER
PHASE COMP
N
O
P
Q

Main 4/4 Schematic Diagram

CAUTION!
FIXED VOLTAGE POWER SUPPLY CIRCUIT IS USED IN THIS UNIT.
IF MAIN FUSE (F01) IS BLOWN, CHECK TO SEE THAT ALL COMPONENTS IN THE POWER SUPPLY CIRCUIT ARE NOT DEFECTIVE BEFORE YOU CONNECT THE AC PLUG TO THE AC POWER SUPPLY. OTHERWISE IT MAY CAUSE SOME COMPONENTS IN THE POWER SUPPLY CIRCUIT TO FAIL.


HOT CIRCUIT. BE CAREFUL.
POWER SUPPLY BLOCK
SYMBOL No.# 10**~
POWER CONTROL BLOCK SYMBOL No. #15**
AC1001
AC220V/240V
50Hz/60Hz
F1001
T1.6AH
L1001
1mH
L1002
68mH
C1001
0.047
/250V
C1002
0.047
/250V
D1001
1N4005
D1002
1N4005
D1003
1N4005
D1004
1N4005
R1001
4.7 (2W)
C1004
22/400V
C1005
0.01/500V
R1002
82K
(2W)
C1003
2200p
/400V
L1007
BEAD
R1005
82K
R1006
82K
R1007
82K
R1004
82K
TP1001
HOTGND
R1009
39
R1008
39
R1010
39
R1013
68K
R1014
68K
C1006
56p/
1000V
D1005
EG01C
L1006
BEAD
C1008
3300p
X, K
R1011
3.9K
C1007
0.027
(SR)
D1006
1N4148M
Q1002
2SC3866
(SW-CTL)
R1019
2.7
Q1001
2SC4204
2SC3576
(SW-CTL)
R1015
68K
R1018
2.7
R1016
68K
R1012
470
C1009
8200p
Y, M
R1017
2.7K
C1010
0.022u
SR
D1008
1N4148M
D1007
1N4148M
(-0.2)
(-0.3)
-0.2
-0.3
0
11.1
T1001
D1009
EG01C
D1010
RU3YX
EGP20B
EGP20D
L1005
BEAD
L1003
22uH
C1011
4.7/50V
C1012
470/16V
C1014
330/
16V
D1011
MA188/BAV21
C1013
22/50V
D1012
AK03
SB040
11EQ04
C1015
330/16V
L1004
10uH
C1016
1000
/10V
D1013
MA178/BAV18
C1017
100/10V
D1016
UZ6.8A
C1018
0.01uF
IC1001
PC120F
ERROR
VOLTAGE DET
(-0.3)
4.8
5.8
R1020
220
R1021
1K
C1019
0.047u
SR
R1022
47
R1023
3K
(G)
R1024
820
C1021
150p B
IC1002
KIA431
KA431Z
SHUNT
REGULATOR
REG
2.5
R1025
2.2K
(G)
HOT
COLD
AL+40V
AL+12V
AL-30V
AL+5V
GND
F-1
F-2
R1503 1.8K (1W)
R1502
15K
Q1502
2SC3246
SWITCHING
P-ON+10V
D1503
UZ12B
Q1501
KTC3199
SW-CTL/
ERR AMP
10.7
11.8
10.1
D1502
1N4148M
C1501
0.47
/50
D1505
UZ10C
0.6
D1504
1N4148M
C1505
47p SL
R1504
4.7K
R1505
4.7K
D1501
UZ6.2
B
R1501
4.7K
CONTINUE
MAIN 1/4
AL+40V
AL+12V
P-ON+10V
AL-30V
F-1
F-2
P-ON-L
D-PB-L
D-PB+12V
D-PB+5V
P-DOWN-L
AL+5V
CONV.+5V
T+5V
D-REC+5V
D-REC-H
D1506
UZ10A
11.8
9.6
11.7 (11.9)
(0)
Q1503
KRA101M
SWITCHING
D-PB-ON
Q1504
KRA103M
SWITCHING
P-DOWN-L
5.0
1.4
D1507
UZ30A
R1511
22K
C1503
470P
B
R1508
100K
R1509
820
R1506
1.5K
R1507
1.3K
D1509
1N4005
R1510
470
Q1505
2SC3246
5.7
5.8
SWTCHING
+5V REG
D1510
1N4005
C1504
0.022F
/5.5V
C1502
10/16
R1514
47K
R1515
1K
Q1506
KTA1266
SWITCHING
D-REC-ON
(4.2)
(0.1)
(5.0)
(4.9)
Q1507
KRC103M
SWITCHING
D-REC-ON
MAIN
CBA
2
1
R
S
T

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE.

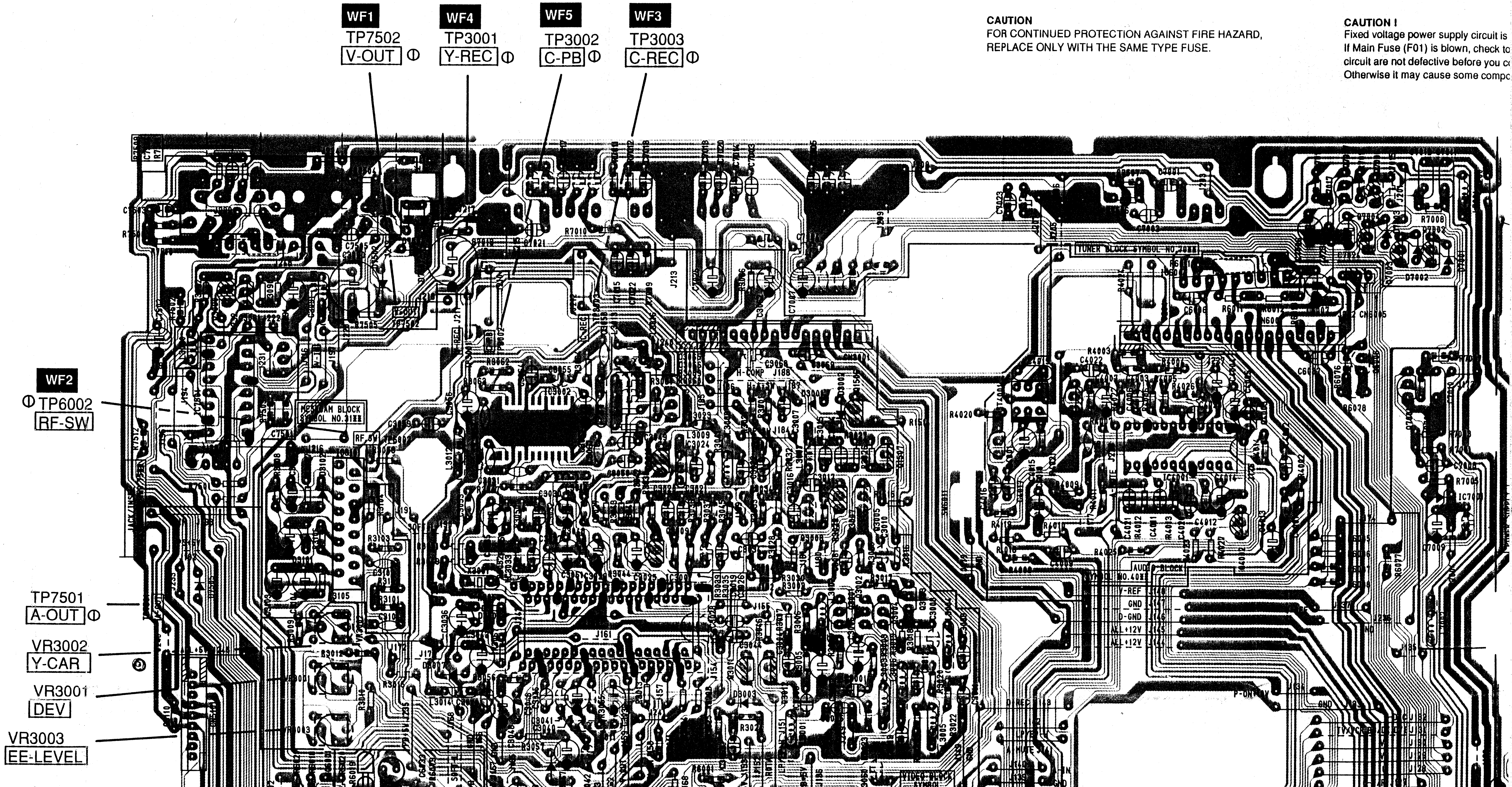
NOTE:
THE VOLTAGE FOR PARTS IN HOT CIRCUIT IS MEASURED USING HOT GND AS A COMMON TERMINAL.

H2150SCM4

Main CBA Top View

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.

CAUTION !
Fixed voltage power supply circuit is
If Main Fuse (F01) is blown, check to
circuit are not defective before you c
Otherwise it may cause some compo



WF1
TP7502
V-OUT
WF4
TP3001
Y-REC
WF5
TP3002
C-PB
WF3
TP3003
C-REC
WF2
TP6002
RF-SW
TP7501
A-OUT
VR3002
Y-CAR
VR3001
DEV
VR3003
EE-LEVEL
TUNER BLOCK SYMBOL NO.2
AUDIO BLOCK
VIDEO BLOCK
H-COMP
V-REF
GND
D-GND
ALL+12V
P-ON

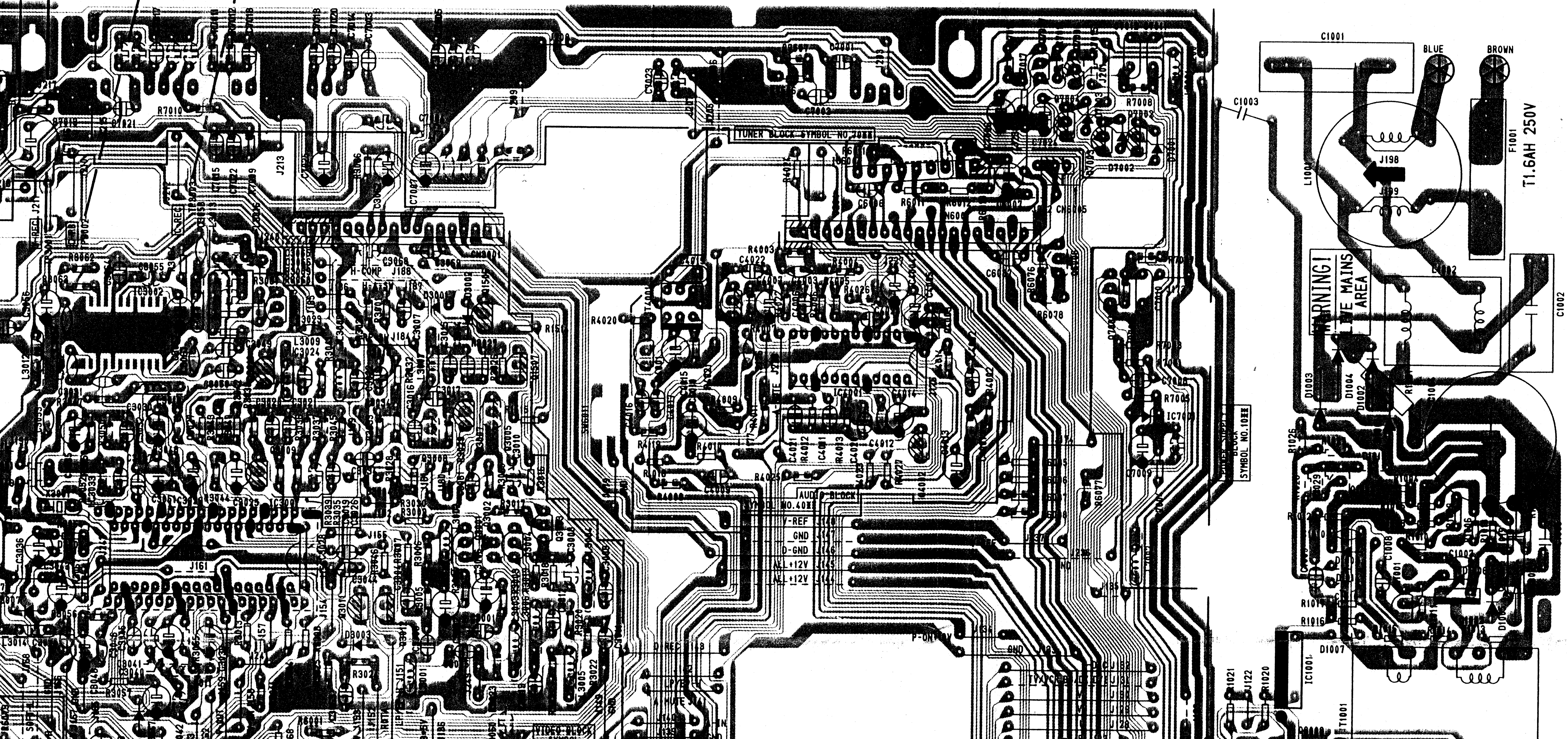
WF4
TP3001
Y-REC ⏀

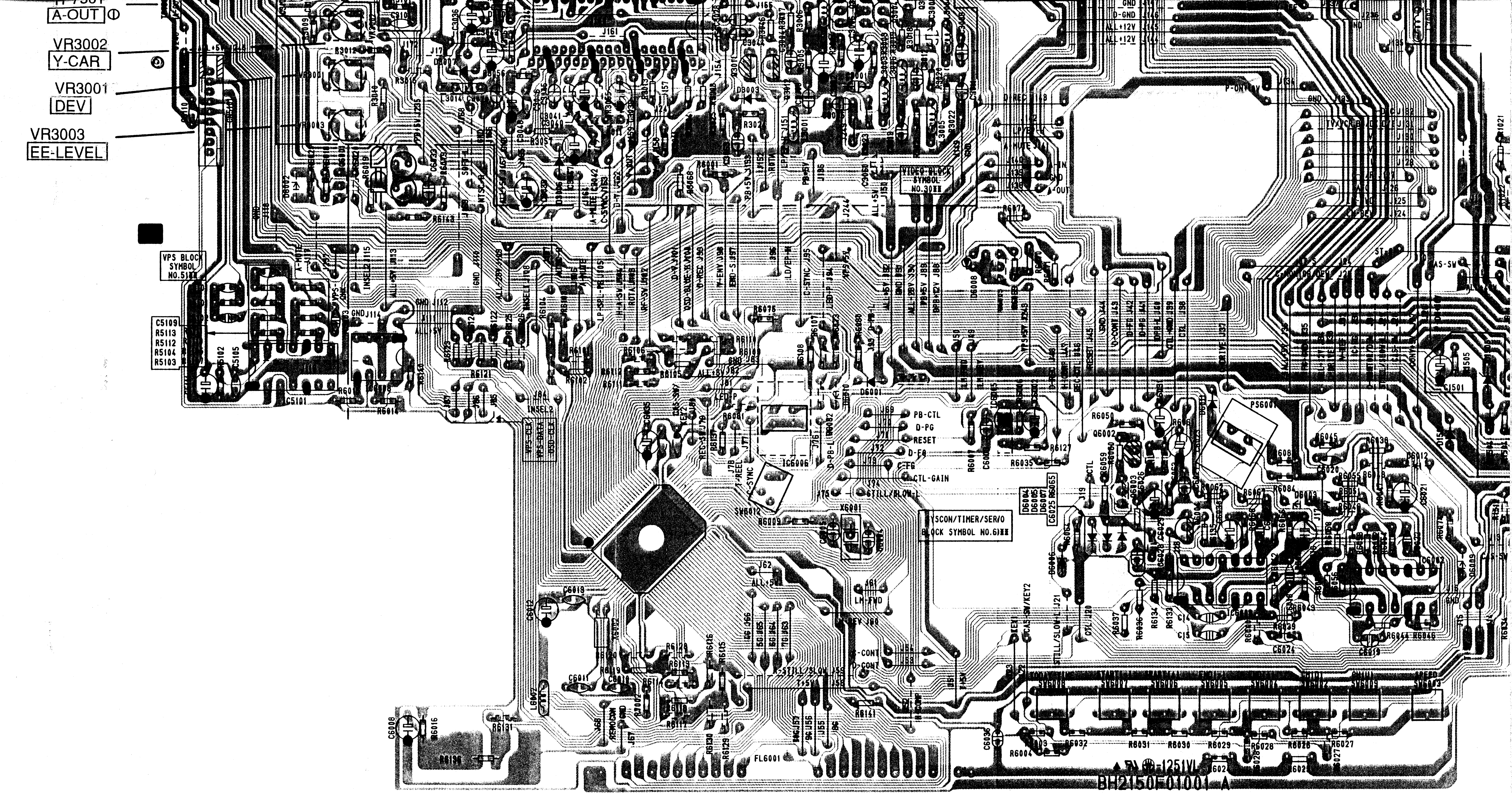
WF5
TP3002
C-PB ⏀

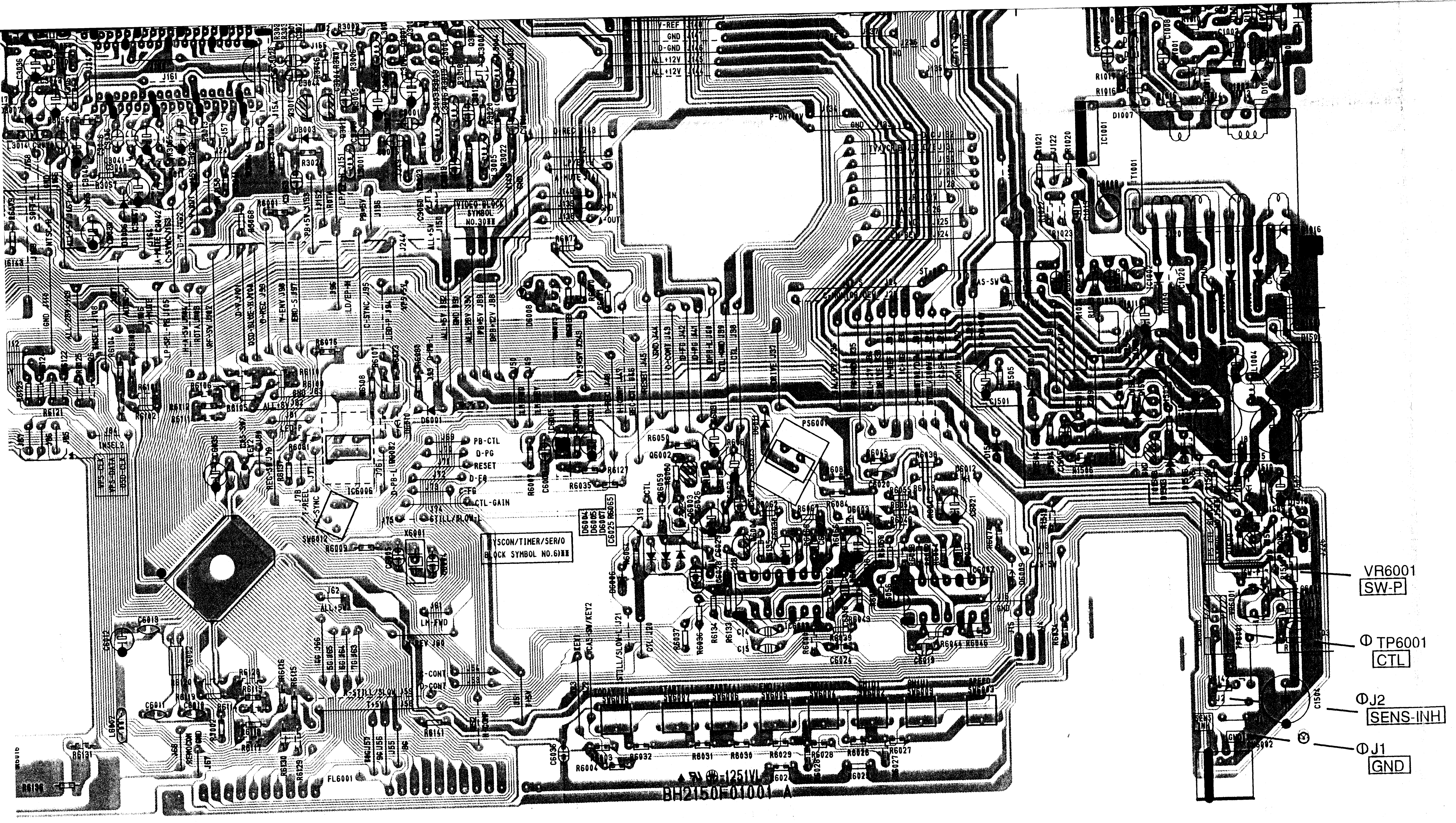
WF3
TP3003
C-REC ⏀

CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE FUSE.

CAUTION !
Fixed voltage power supply circuit is used in this unit.
If Main Fuse (F01) is blown, check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply.
Otherwise it may cause some components in the power supply circuit to fail.

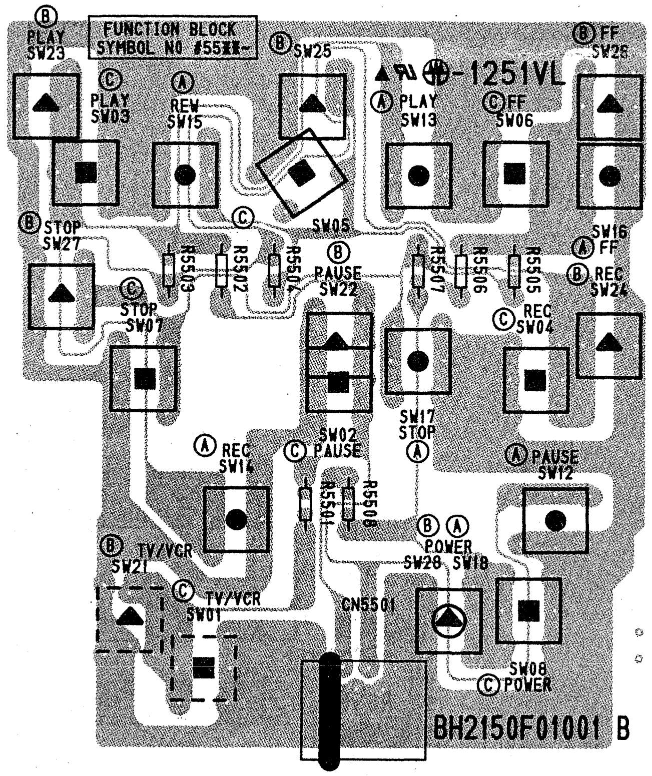

C1001
BLUE
BROWN
C1003
F1001
T1.6AH 250V
J198
J199
L1001
L1002
C1002
WARNING!
LIVE MAINS
AREA
TUNER BLOCK SYMBOL NO.20**
AUDIO BLOCK
NO.40**
V-REF
GND
D-GND
AL+12V
AL+12V
POWER SUPPLY BLOCK SYMBOL NO.10**
P-ON
VIDEO BLOCK
R7010
J213
J211
R4020
R4003
C4022
R6078
R6077
R7006
D7002
IC7001
R7005
C7009
D1003
D1004
D1002
R1026
R1016
D1007
IC1001
T1001
R1021
J122
R1020
H-COMP
J188
L3009
C3024
J161
J155
D3003
R3024
IC6001
C4012
R4025
R4013
R4012
R4011
C4011
C6001
C6006
R6011
CN6005
C7003
C7023
C7087
L3012
L3014
C3036


A-OUT
VR3002
Y-CAR
VR3001
DEV
VR3003
EE-LEVEL
VPS BLOCK SYMBOL NO.51XX
VIDEO BLOCK SYMBOL NO.30XX
SYSCON/TIMER/SER/O BLOCK SYMBOL NO.61XX
C5109
R5113
R5112
R5104
R5103
C5101
PB-CTL
D-PG
RESET
D-FG
C-FG
CTL-GAIN
STILL/SLOW-L
IC6006
X6001
PS6001
SW6012
FL6001
SW6008
SW6007
SW6006
SW6005
SW6004
SW6002
SW6009
SW6003
P-ON+14V
BH2150F01001 A

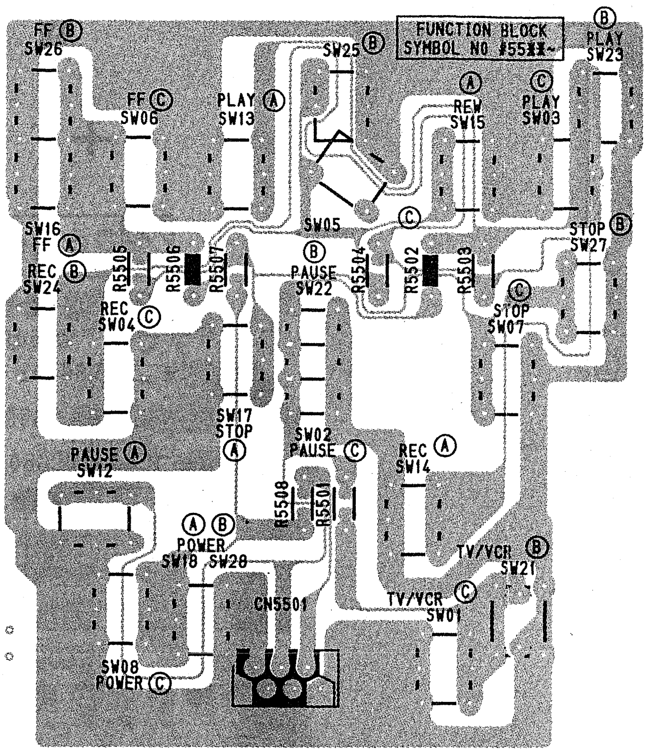

VR6001
SW-P
TP6001
CTL
J2
SENS-INH
J1
GND
VIDEO BLOCK SYMBOL NO.30
SYSCON/TIMER/SERVO BLOCK SYMBOL NO.6
BH2150F01001 A

BH2150F01001A

Function CBA Top View


PLAY SW23
FUNCTION BLOCK SYMBOL NO #55**~
SW25
-1251VL
FF SW26
PLAY SW03
REW SW15
PLAY SW13
FF SW06
STOP SW27
SW05
SW16 FF
REC SW24
R5503
R5502
R5504
PAUSE SW22
R5507
R5506
R5505
STOP SW07
REC SW04
SW17 STOP
REC SW14
SW02 PAUSE
PAUSE SW12
R5501
R5508
POWER SW28 SW18
TV/VCR SW21
TV/VCR SW01
CN5501
SW08 POWER
BH2150F01001 B

Function CBA Bottom View


FF SW26
SW25
FUNCTION BLOCK SYMBOL NO #55**~
PLAY SW23
FF SW06
PLAY SW13
REW SW15
PLAY SW03
SW16 FF
REC SW24
R5505
R5506
R5507
SW05
PAUSE SW22
R5504
R5502
R5503
STOP SW27
REC SW04
STOP SW07
SW17 STOP
SW02 PAUSE
REC SW14
PAUSE SW12
R5508
R5501
POWER SW18 SW28
TV/VCR SW21
CN5501
TV/VCR SW01
SW08 POWER

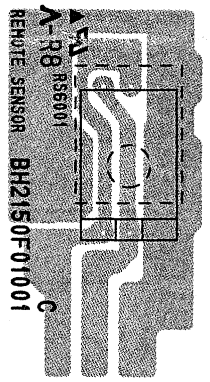
BH2150F01001B

EXCHANGEABILITY OF REMOTE SENSOR CBA FOR PART NO. OF REMOTE SENSOR

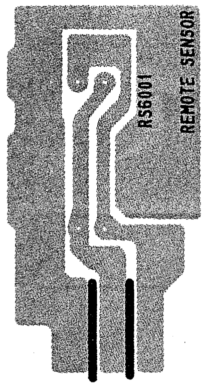
RS6001(Remote Sensor)		Remote Sensor CBA No.	
Part No.	Maker No.	BH2150 F01001C	BH2150 F01001D
USESJRSKK008	HC-278N	×	○
USESJRSSH009	GP1U582X	×	○
USESJRSJR004	NJH32H367A	○	×

Note:CBA No.'s are shown in Remote Sensor Top/Bottom View.

Remote Sensor CBA Top View

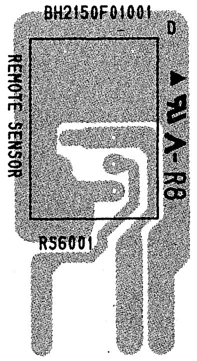

A-R8
RS6001
REMOTE SENSOR
BH2150F01001 C

Remote Sensor CBA Bottom View

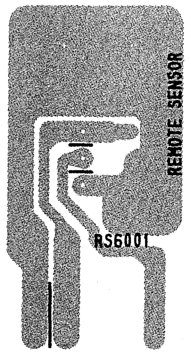

RS6001
REMOTE SENSOR

BH2150F01001C

Remote Sensor CBA Top View

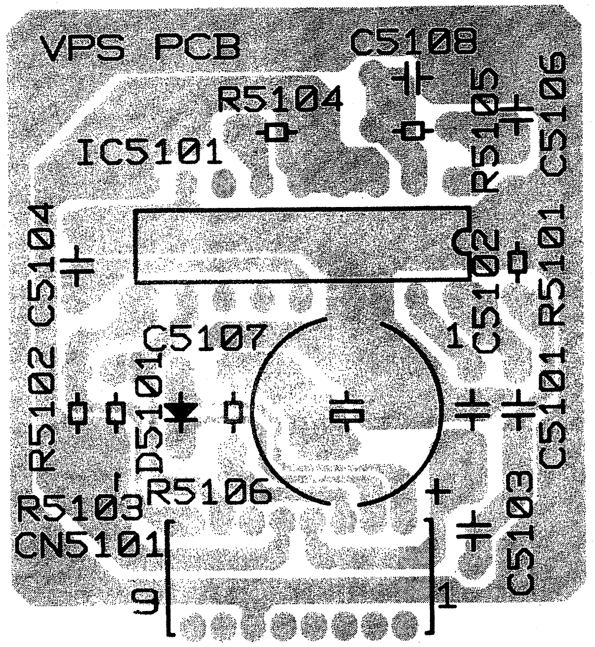

BH2150F01001
D
REMOTE SENSOR
A-R8
RS6001

Remote Sensor CBA Bottom View

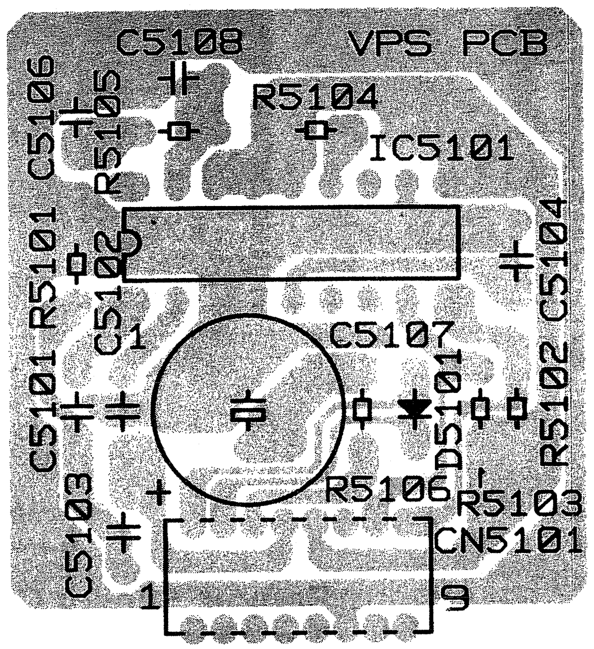

REMOTE SENSOR
RS6001

BH2150F01001D

VPS CBA Top View

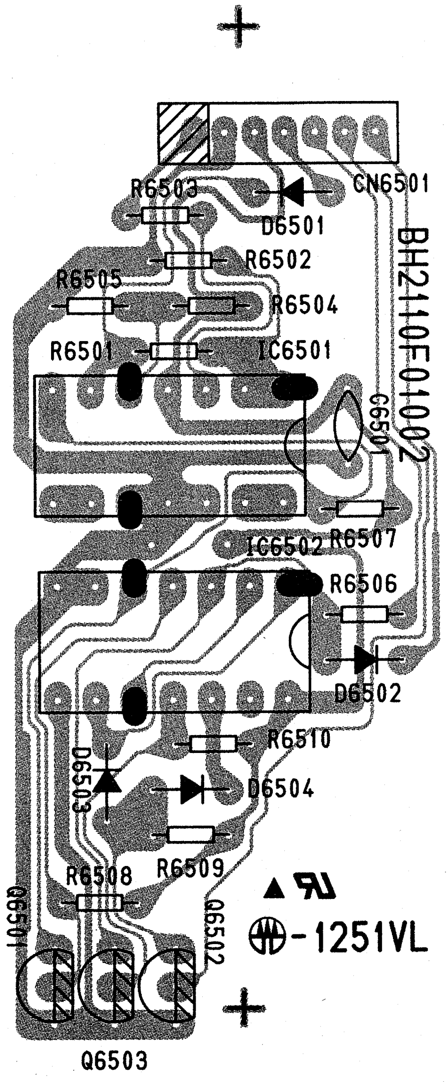

VPS PCB
C5108
R5104
R5105
C5106
IC5101
C5104
C5102
R5101
C5107
1
R5102
D5101
C5101
R5103
R5106
CN5101
C5103
9
1

VPS CBA Bottom View

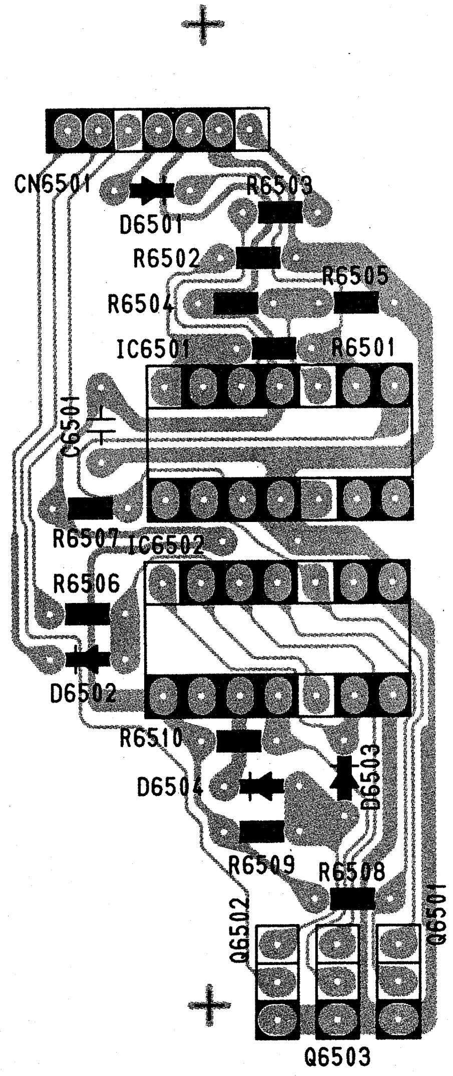

C5108
VPS PCB
C5106
R5105
R5104
IC5101
R5101
C5102
1
C5104
C5107
C5101
D5101
R5102
C5103
R5106
R5103
CN5101
1
9

BK8036F01A01

DSP CBA Top View

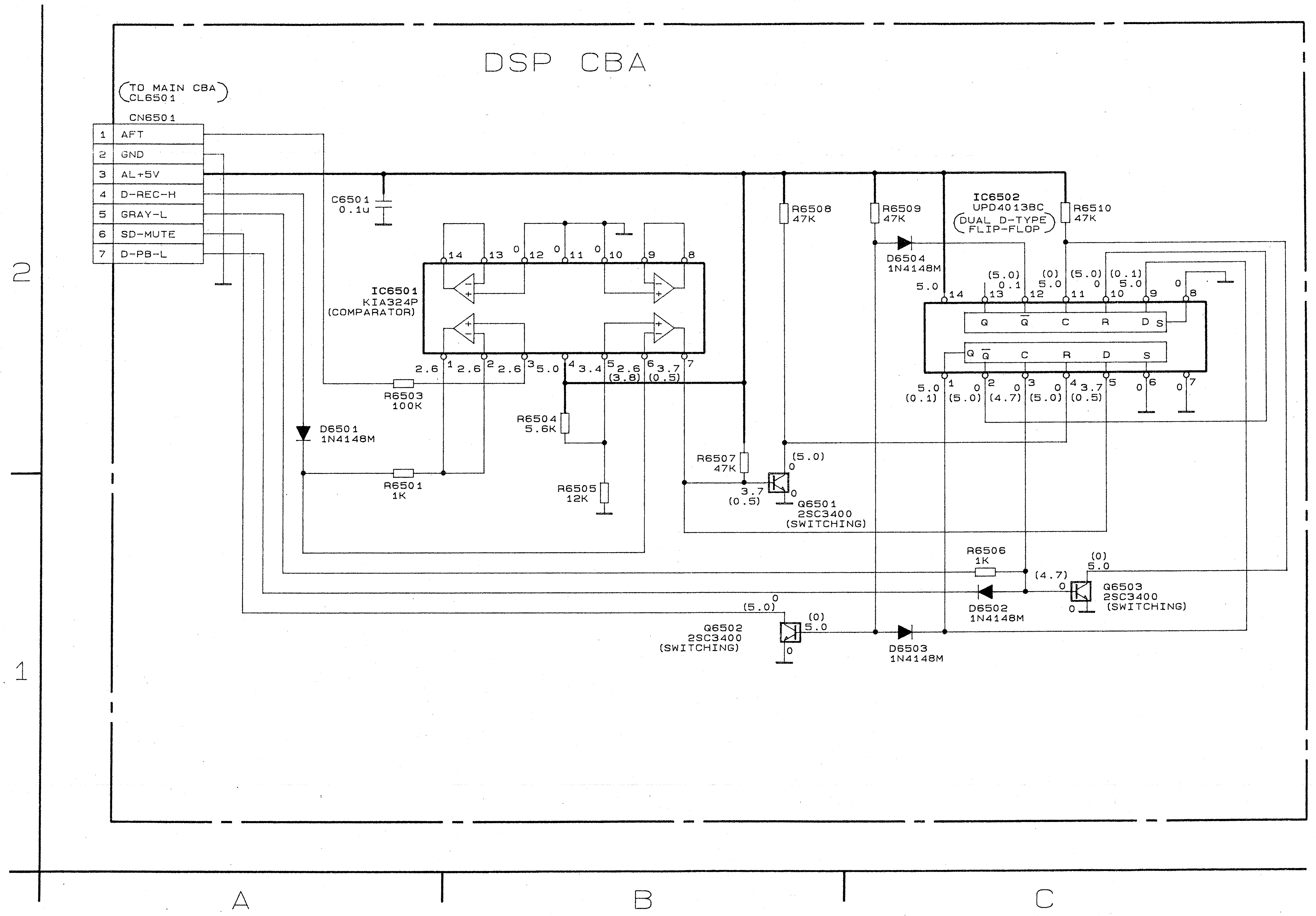

CN6501
R6503
D6501
R6502
R6505
R6504
R6501
IC6501
C6501
BH2110F01002
IC6502
R6507
R6506
D6502
R6510
D6503
D6504
R6508
R6509
Q6501
Q6502
Q6503
-1251VL

DSP CBA Bottom View


CN6501
R6503
D6501
R6502
R6505
R6504
IC6501
R6501
C6501
R6507
IC6502
R6506
D6502
R6510
D6504
D6503
R6509
R6508
Q6502
Q6501
Q6503

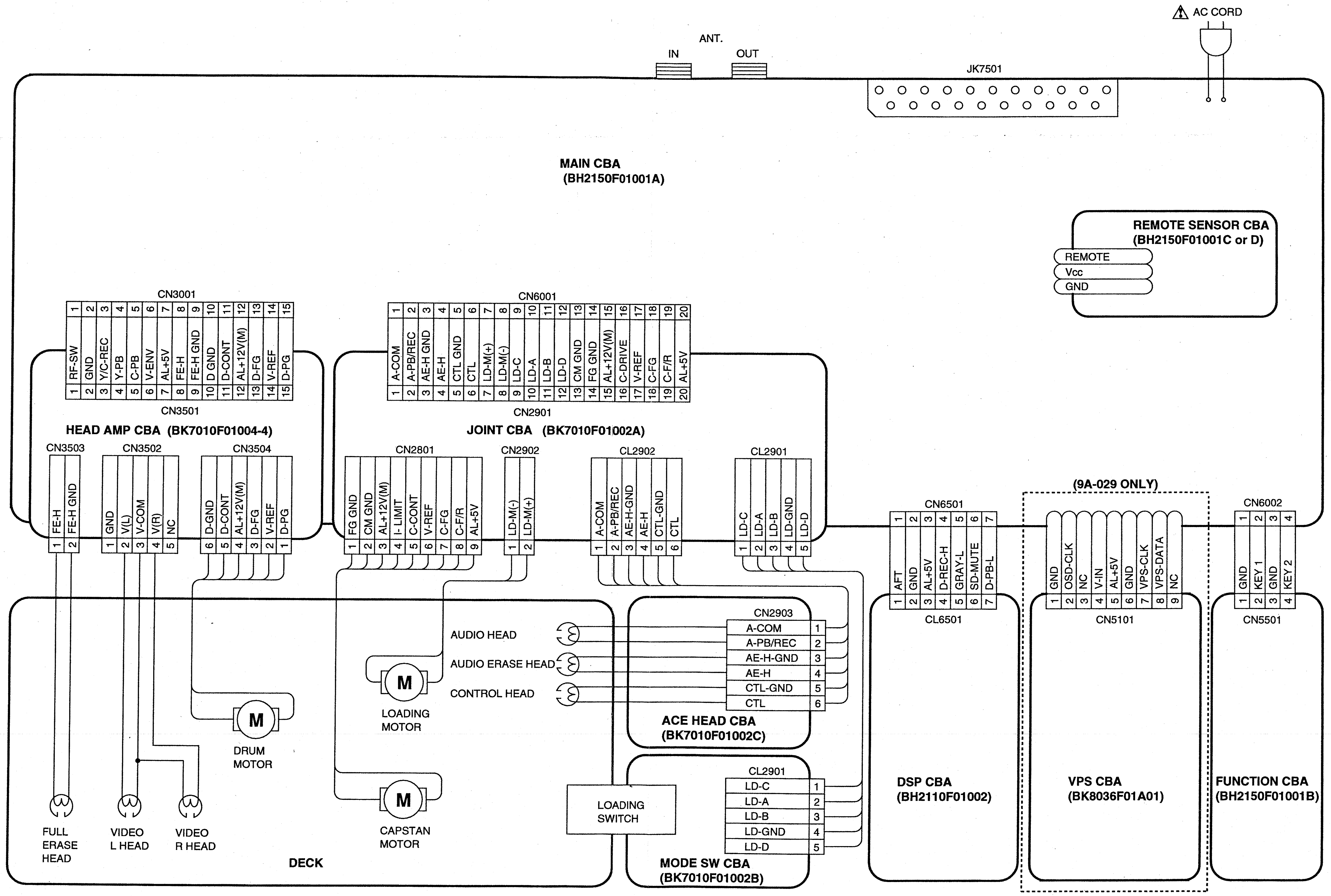
BH2110F01002

DSP Schematic Diagram


DSP CBA
TO MAIN CBA
CL6501
CN6501
1 AFT
2 GND
3 AL+5V
4 D-REC-H
5 GRAY-L
6 SD-MUTE
7 D-PB-L
C6501
0.1u
IC6501
KIA324P
(COMPARATOR)
R6503
100K
D6501
1N4148M
R6501
1K
R6504
5.6K
R6505
12K
R6507
47K
R6508
47K
Q6501
2SC3400
(SWITCHING)
R6509
47K
D6504
1N4148M
IC6502
UPD4013BC
DUAL D-TYPE
FLIP-FLOP
R6510
47K
Q
Q̅
C
R
D
S
R6506
1K
D6502
1N4148M
Q6503
2SC3400
(SWITCHING)
Q6502
2SC3400
(SWITCHING)
D6503
1N4148M
2
1
A
B
C

H2150SCMS2

WIRING DIAGRAM


AC CORD
ANT.
IN
OUT
JK7501
MAIN CBA
(BH2150F01001A)
REMOTE SENSOR CBA
(BH2150F01001C or D)
REMOTE
Vcc
GND
CN3001
1 RF-SW
2 GND
3 Y/C-REC
4 Y-PB
5 C-PB
6 V-ENV
7 AL+5V
8 FE-H
9 FE-H GND
10 D GND
11 D-CONT
12 AL+12V(M)
13 D-FG
14 V-REF
15 D-PG
CN3501
HEAD AMP CBA (BK7010F01004-4)
CN6001
1 A-COM
2 A-PB/REC
3 AE-H GND
4 AE-H
5 CTL GND
6 CTL
7 LD-M(+)
8 LD-M(-)
9 LD-C
10 LD-A
11 LD-B
12 LD-D
13 CM GND
14 FG GND
15 AL+12V(M)
16 C-DRIVE
17 V-REF
18 C-FG
19 C-F/R
20 AL+5V
CN2901
JOINT CBA (BK7010F01002A)
CN3503
1 FE-H
2 FE-H GND
CN3502
1 GND
2 V(L)
3 V-COM
4 V(R)
5 NC
CN3504
6 D-GND
5 D-CONT
4 AL+12V(M)
3 D-FG
2 V-REF
1 D-PG
CN2801
1 FG GND
2 CM GND
3 AL+12V(M)
4 I-LIMIT
5 C-CONT
6 V-REF
7 C-FG
8 C-F/R
9 AL+5V
CN2902
1 LD-M(-)
2 LD-M(+)
CL2902
1 A-COM
2 A-PB/REC
3 AE-H-GND
4 AE-H
5 CTL-GND
6 CTL
CL2901
1 LD-C
2 LD-A
3 LD-B
4 LD-GND
5 LD-D
(9A-029 ONLY)
CN6501
1 AFT
2 GND
3 AL+5V
4 D-REC-H
5 GRAY-L
6 SD-MUTE
7 D-PB-L
CL6501
1 GND
2 OSD-CLK
3 NC
4 V-IN
5 AL+5V
6 GND
7 VPS-CLK
8 VPS-DATA
9 NC
CN5101
CN6002
1 GND
2 KEY 1
3 GND
4 KEY 2
CN5501
AUDIO HEAD
AUDIO ERASE HEAD
CONTROL HEAD
CN2903
A-COM 1
A-PB/REC 2
AE-H-GND 3
AE-H 4
CTL-GND 5
CTL 6
ACE HEAD CBA
(BK7010F01002C)
M
LOADING MOTOR
M
DRUM MOTOR
M
CAPSTAN MOTOR
LOADING SWITCH
CL2901
LD-C 1
LD-A 2
LD-B 3
LD-GND 4
LD-D 5
MODE SW CBA
(BK7010F01002B)
FULL ERASE HEAD
VIDEO L HEAD
VIDEO R HEAD
DECK
DSP CBA
(BH2110F01002)
VPS CBA
(BK8036F01A01)
FUNCTION CBA
(BH2150F01001B)

SYSTEM CONTROL TIMING CHARTS

Mode SW : LD-A/LD-B/LD-C/LD-D

LD-SW				Symbol	
LD-A	LD-B	LD-C	LD-D		
L	H	H	H	EJ	Eject
H	H	H	H	CL	REW Reel
L	L	H	H	SB	Stop (B)
H	L	H	H	TL	Brake Cancel
H	L	L	H	FB	
H	H	L	H	SF	FF / REW, Stop (A)
H	H	L	L	AU	
H	H	H	L	AL	Play / REC (FS Pause 2 Head Still)
H	L	H	L	SS	4 Head Slow / Still
H	H	H	H	GC	Capstan Reversal
L	H	H	L	RS	RS (REV Reel)

↑ **Note:**

EJ ⟶ RS : Loading FWD (LM-FWD "H", LM-REV "L")

RS ⟶ EJ : Loading REV (LM-FWD "L", LM-REV "H")

Stop (A) = Loading

Stop (B) = Unloading

Note :

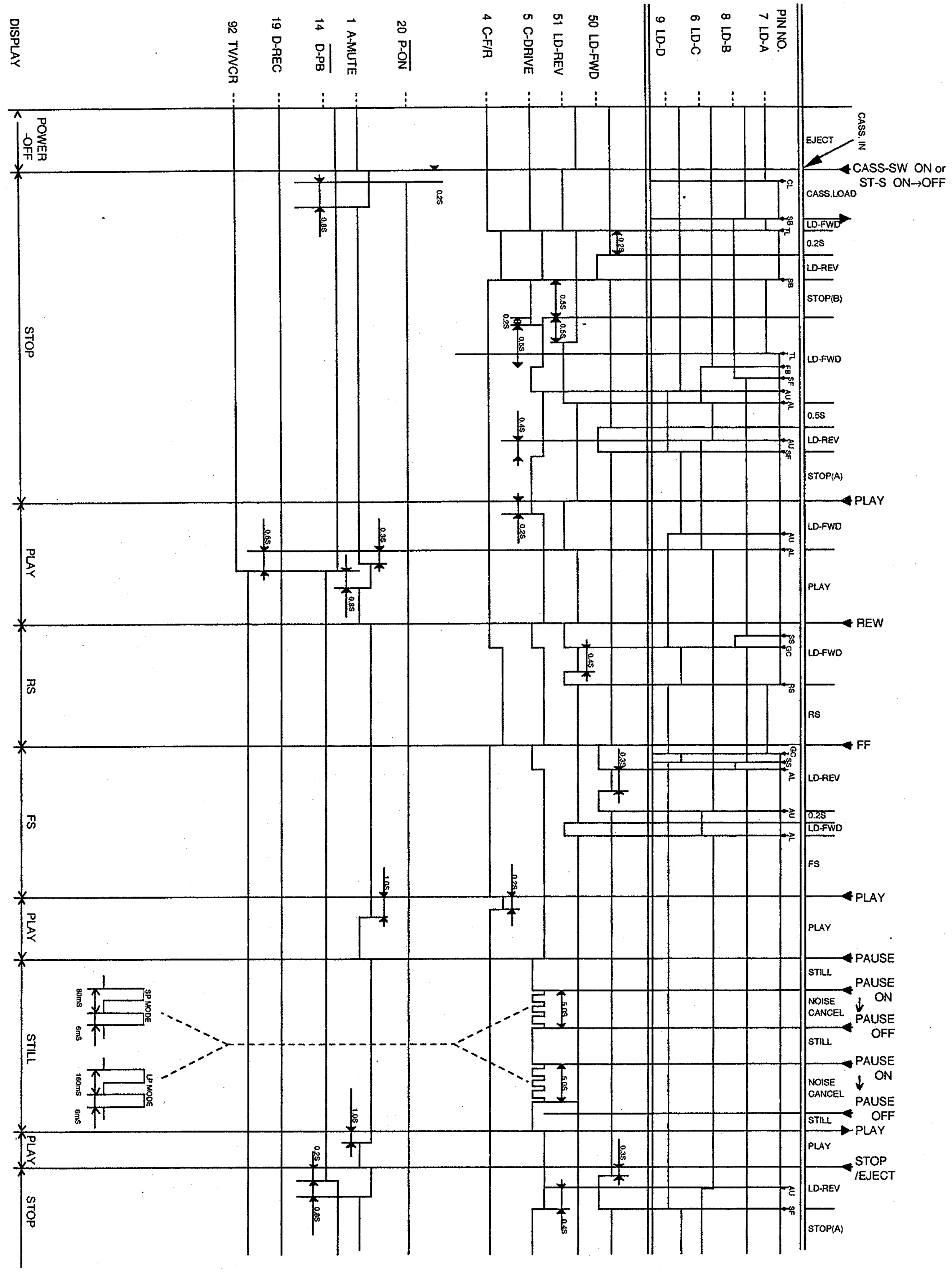
Symbol	Loading Status
EJ	Eject
CL	Eject ~ Loading Completion
SB	REW ~ Stop(B)
TL	Stop(B) ~ Brake Cancel
FB	Brake Cancel ~ FF / REW
SF	FF / REW ~ Stop(A)
AU	Stop(A) ~ Play / REC
AL	Play / REC ~ 4 Head Still / Slow
SS	4 Head Still / Slow ~ Capstan Reversal
GC	Capstan Reversal ~ REW Reel
RS	REW

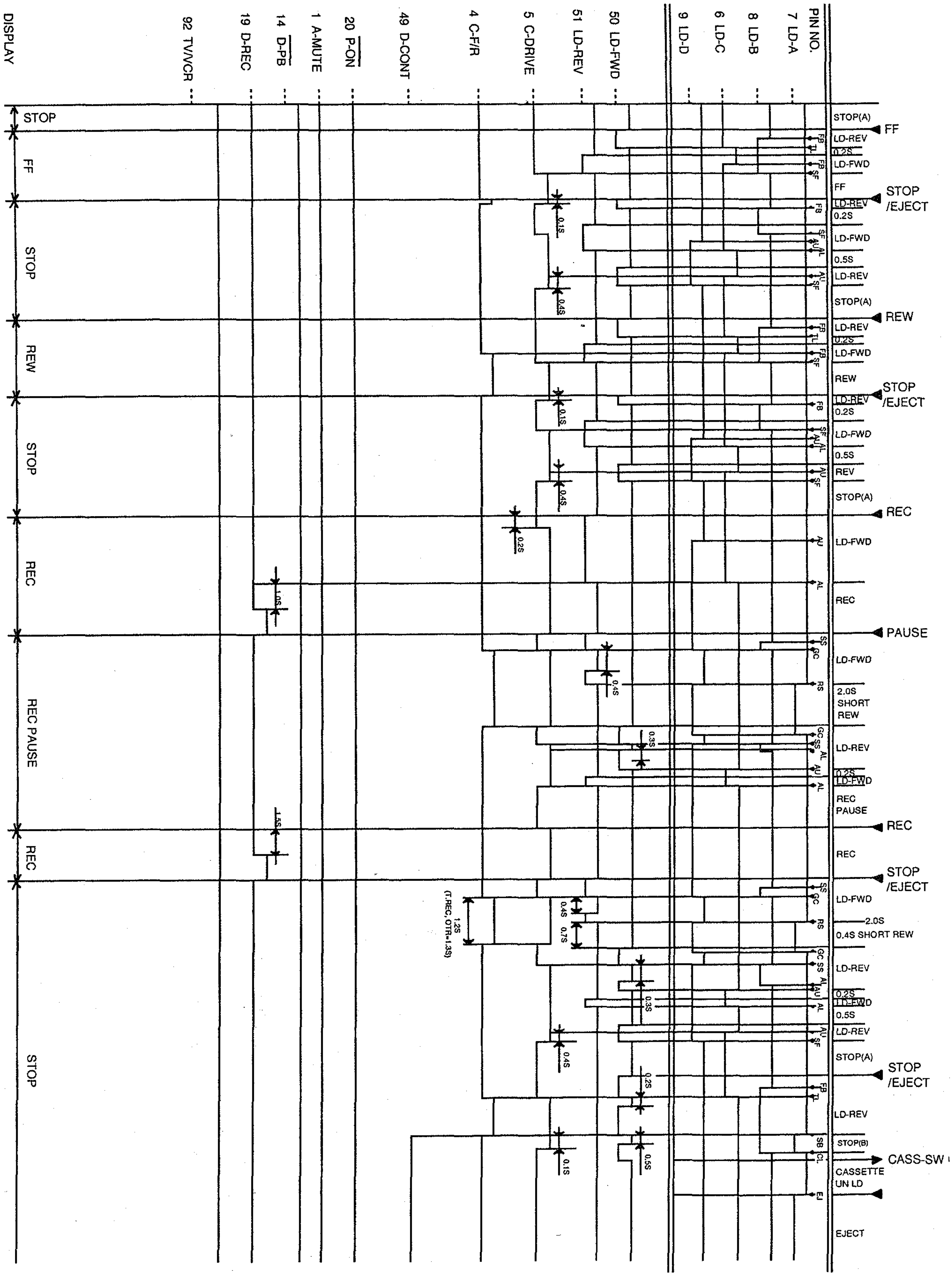
Loading Motor/Control

LM-FWD	LM-REV	Description
H	H	Stop
H	L	Loading Forward Rotation
L	H	Loading Reverse Rotation

Capstan Motor/Control

C-DRIVE	C-F/R	Description
L	L/H	Stop, The brake is not applied.
H	L	Capstan, Reel Forward Rotation
H	H	Capstan, Reel Reverse Rotation


PIN NO.
7 LD-A
8 LD-B
6 LD-C
9 LD-D
50 LD-FWD
51 LD-REV
5 C-DRIVE
4 C-F/R
20 P-ON
1 A-MUTE
14 D-PB
19 D-REC
92 TV/VCR
DISPLAY
POWER -OFF
STOP
PLAY
RS
FS
PLAY
STILL
PLAY
STOP
CASS. IN
EJECT
CASS-SW ON or ST-S ON→OFF
CASS.LOAD
LD-FWD
0.2S
LD-REV
STOP(B)
LD-FWD
0.5S
LD-REV
STOP(A)
PLAY
LD-FWD
PLAY
REW
LD-FWD
RS
FF
LD-REV
0.2S
LD-FWD
FS
PLAY
PLAY
PAUSE
STILL
PAUSE ON
NOISE CANCEL
PAUSE OFF
STILL
PAUSE ON
NOISE CANCEL
PAUSE OFF
STILL
PLAY
PLAY
STOP /EJECT
LD-REV
STOP(A)
CL
SB
TL
SB
TL
FB
SF
AU
AL
AU
SF
AU
AL
SS
GC
RS
GC
SS
AL
AU
AL
AU
SF
0.2S
0.8S
0.2S
0.5S
0.5S
0.2S
0.5S
0.4S
0.2S
0.5S
0.3S
0.8S
0.4S
0.3S
1.0S
0.2S
5.0S
5.0S
1.0S
0.2S
0.8S
0.3S
0.4S
SP MODE
80mS
6mS
LP MODE
180mS
6mS


PIN NO.
7 LD-A
8 LD-B
6 LD-C
9 LD-D
50 LD-FWD
51 LD-REV
5 C-DRIVE
4 C-F/R
49 D-CONT
20 P-ON
1 A-MUTE
14 D-PB
19 D-REC
92 TV/VCR
DISPLAY
STOP
FF
STOP
REW
STOP
REC
REC PAUSE
REC
STOP
STOP(A)
LD-REV
0.2S
LD-FWD
FF
LD-REV
0.2S
LD-FWD
0.5S
LD-REV
STOP(A)
LD-REV
0.2S
LD-FWD
REW
LD-REV
0.2S
LD-FWD
0.5S
REV
STOP(A)
LD-FWD
REC
LD-FWD
2.0S
SHORT
REW
LD-REV
0.2S
LD-FWD
REC
PAUSE
REC
LD-FWD
2.0S
0.4S SHORT REW
LD-REV
0.2S
LD-FWD
0.5S
LD-REV
STOP(A)
LD-REV
STOP(B)
CASSETTE
UN LD
EJECT
FF
STOP
/EJECT
REW
STOP
/EJECT
REC
PAUSE
REC
STOP
/EJECT
STOP
/EJECT
CASS-SW
FB
TL
SF
AU
AL
SS
GC
RS
SB
CL
EJ
0.1S
0.4S
0.2S
1.0S
1.5S
0.3S
0.7S
0.5S
1.2S
(T.REC, OTR=1.3S)

IC PIN FUNCTION DESCRIPTION

IC6001 (SERVO / SYSTEM CONTROL IC)

"H" ≥ 4.5V, "L" ≤ 0V

Pin No.	IN/ OUT	Signal Name	Function	Active Level
1	OUT	A-MUTE	Audio Mute Output (Mute ="H")	H
2	OUT	LP/SLP-PB	Special Play back Tape Speed LP or SLP mode = "H" output	H
3	OUT	REC-CTL	Capstan Motor Control Pulse Input at Rec Mode	H/L
4	OUT	C-F/R	Capstan Motor FWD/REV Control Signal (Forward= "L"/Reverse= "H")	H/L
5	OUT	C-DRIVE	Capstan Motor Drive Signal Output (Rotation= H"/Stop = "L")	H
6	IN	LD-C	Loading Position Detector	H/L
7	IN	LD-A	Loading Position Detector	H/L
8	IN	LD-B	Loading Position Detector	H/L
9	IN	LD-D	Loading Position Detector	H/L
10	OUT	N.U.	Not Used	–
11	OUT	N.U.	Not Used	–
12	OUT	ROTA	Color Phase Rotary Changeover Signal	H/L
13	OUT	RF-SW	Video Head Switching Pulse	H/L
14	OUT	D-PB-L	Video/Audio Instruction Signal	L
15	–	N.C.	Not Used	–
16	–	N.C.	Not Used	–
17	OUT	D-V/SYNC	Dummy V-Sync Output	H
18	OUT	GRAY-L	"L" Output at NOSignal	L
19	OUT	D-REC-H	Video/Audio Recording Instruction Signal (Record="H")	H
20	OUT	P-ON-L	Power-ON Control Signal	L
21	OUT	LED-P	Pulse Signal for ST/END Sensor	H/L
22	IN	AFT	Tuner AFC Voltage Signal Input	A/D
23	IN	V-ENV / REC-SW	Video DC Envelope Voltage Input /Recording Safety SW Detect	A/D
24	IN	END-S	Tape End Position Detect	A/D
25	IN	ST-S	Tape Start Position Detect	A/D
26	IN	C-MONITOR /DEW	Capstan Motor Control Voltage Monitor Input/DEWSensor Position Detect Signal Input	A/D
27	IN	KEY IN-2/ CAS-SW	A/D Key Data Signal Input	A/D
28	–	VREF	A VREF A/D Converter Reference Voltage Input (All: 5V)	–
29	–	Vss	A Vss A/D Converter Power Supply (GND)	–
30	–	A VDD	A Vss A/D Converter Power Supply (Back Up 5V)	–
31	IN	KEY1	A/D Key Data Signal Input	A/D
32	IN	PG-DELAY /TEST	RF-SW Signal Delay Adjust Voltage Input/Test	A/D
33	IN	S-REEL	Not Used	A/D
34	IN	T-REEL	Take Up Reel Rotation Signal	A/D
35	IN	P-DOWN-L	Power Down Detection Input	L
36	IN	C-SYNC	Composite Sync Signal Input	PULSE
37	IN	PB-CTL	Capstan Motor Control Pulse Input at Playback Mode	PULSE

Pin No.	IN/ OUT	Signal Name	Function	Active Level
38	IN	D-PG	Drum Pulse Generator Input	PULSE
39	–	GND	GND	–
40	IN	RESET	System Reset Signal (Usually= "H"/Reset= "L")	L
41	–	Vss	Vss	–
42	–	X2	MAIN Clock 12 MHz (OUT)	–
43	–	X1	MAIN Clock 12 MHz (IN)	–
44	IN	D-FG	Drum Frequency Generator Input	PULSE
45	IN	C-FG	Capstan Frequency Generator Signal Input	PULSE
46	–	N.C.	–	–
47	OUT	CTL-GAIN	CTL Amp Gain Switching Signal	H/L
48	OUT	C-CONT	Capstan Motor Control Signal	PWM
49	OUT	D-CONT	Drum Motor Control Signal	PWM
50	OUT	LM-FWD	Loading Motor Forward Control Output	H
51	OUT	LM-REV	Loading Motor Reverse Control Output	H
52	–	N.C.	–	–
53	–	N.U.	Not Used	–
54	OUT	G1	Display Digit Output	H
55	OUT	G2	Display Digit Output	H
56	OUT	G3	Display Digit Output	H
57	OUT	G4	Display Digit Output	H
58	OUT	G5	Display Digit Output	H
59	OUT	G6	Display Digit Output	H
60	OUT	G7	Display Digit Output	H
61	OUT	G8	Display Digit Output	H
62	OUT	G9	Display Digit Output	H
63	OUT	G10	Display Digit Output	H
64	OUT	a	Display Segment Output	H
65	OUT	b	Display Segment Output	H
66	OUT	c	Display Segment Output	H
67	OUT	d	Display Segment Output	H
68	OUT	e	Display Segment Output	H
69	OUT	f	Display Segment Output	H
70	OUT	g	Display Segment Output	H
71	OUT	h	Display Segment Output	H
72	OUT	i	Display Segment Output	H
73	OUT	j	Display Segment Output	H
74	–	VPS-CHK	Not Used	–
75	–	N.U.	Not Used	–
76	–	SOFT-L	Not Used	–
77	–	N.U.	Not Used	–
78	–	-28V	-28V	–
79	OUT	N.U.	Not Used	–
80	OUT	N.U.	Not Used	–
81	OUT	N.U.	Not Used	–
82	IN/ OUT	VPS-DATA	VPS IC/MEMORY IC Control (Data)	H/L
83	OUT	VPS-CLK	VPS IC/MEMORY IC Control (Clock)	H/L
84	OUT	T-DAC	Tuner Voltage Control PWM Output	–
85	IN	REMOTE	Remote Control Input Signal	L
86	–	X' TAL2	Sub Clock 32kHz(IN)	–
87	–	X' TAL1	Sub Clock 32kHz(OUT)	–
88	–	Vss	Vss	–
89	–	VDD	Back Up 5V (VDD)	–
90	–	Vpp	Back Up 5V	–
91	–	NC	Not Used	–
92	OUT	BG/DK	Not Used	–
93	IN	N.U.	Not Used	PULSE
94	OUT	BL-L	Output for Tuner Band Selection	L
95	OUT	BH-L	Output for Tuner Band Selection	L

Pin No.	IN/ OUT	Signal Name	Function	Active Level
96	OUT	BU-L	Output for Tuner Band Selection	L
97	OUT	LP-H	Tape Speed LP Mode= " H" Output	H
98	OUT	INSEL-1	Input Selector Control Signal 1	H/L
99	–	N.U.	Not Used	–
100	–	N.U.	Not Used	–

NOTE :

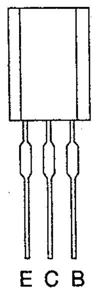
Abbreviation for Active Level

PWM ---------------- Pulse Wide Modulation

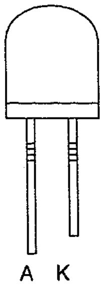
A/D ------------------- Analog - Digital Converter

LEAD IDENTIFICATION

2SA608SP
2SC536SP
2SC3400
2SC2839
2SC4204
KRC103M
KRA103M
2SC3193
KRA109M
2SA1346
2SC3576
KRA101M
KSR2205
2SA1654
KSR2203
KSR2208
2SA1347
KSR1203
KTA1267
KSA1175
KTC3199
KSR2785
KTA1266
2SA1317
2SC3331
KRC102M



SID1K10CXM
LN66A.FN
IR940 IR4
IR940 IR5



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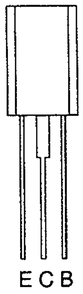
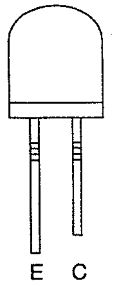
2SC3246



PT380F(B)



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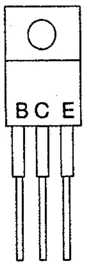
2SC3866



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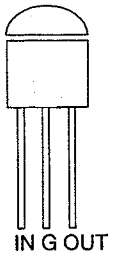
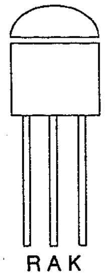
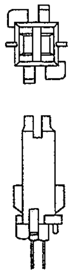
KIA4031P
KIA7533Z



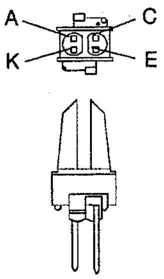
KIA431
KA431Z
AN1431T
L5431



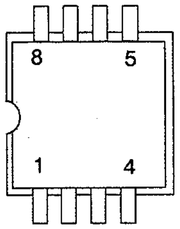
SG-224



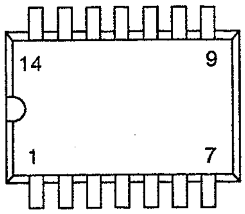
GP1S38



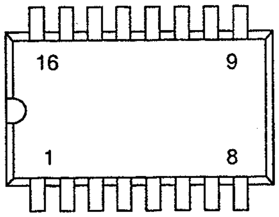
24LC01B/P
ST24C01B1
X24C01AP



KA339
KIA339
KA324
KIA324P



NJU4052BP
µPD4052BC
TC4052BP
HEF4052BP



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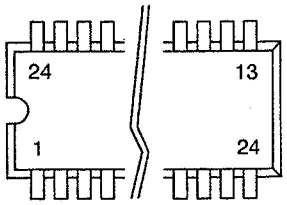
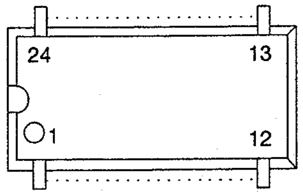
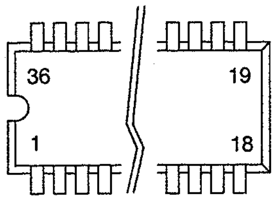


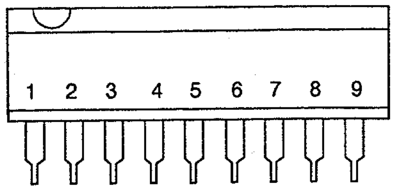
LC89972M



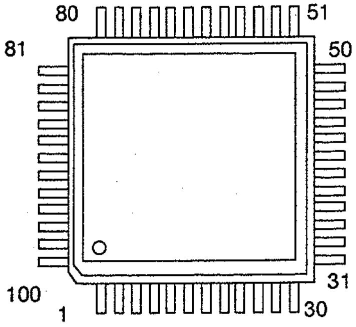
LA7347



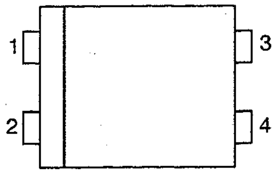
TA7291S



QSMQB0RSN027
QSMQC0RSN027


80
51
81
50
100
1
31
30

PC120F



Note:
A: Anode
K: Cathode
E: Emitter
C: Collector
B: Base
R: Reference

DECK MECHANISM SECTION

VIDEO RECORDER

9A-009 / 9A-029

Sec. 2: Deck Mechanism Section
- Standard Maintenance
- Alignment for Mechanism
- Disassembly/Assembly of Mechanism
- Schematic Diagrams
- CBA' s

TABLE OF CONTENTS

Standard Maintenance 2-1-1
Service Fixtures and Tools 2-2-1
Mechanical Alignment Procedures 2-3-1
Disassembly / Assembly Procedures of Deck Mechanism 2-4-1
Schematic Diagrams and CBA' s 2-5-1

STANDARD MAINTENANCE

Service Schedule of Components

H: Hours ○: Check ●: Change

Deck		Periodic Service Schedule			
Ref. No.	Parts Name	1,000 H	2,000 H	3,000 H	4,000 H
B2	Cylinder Assembly	○	●	○	●
B3	Loading Motor Assembly			●	
B6	Pinch Roller Arm Assembly		●		●
B8	Pulley Assembly		●		●
B21	Loading Belt		●		●
B27	Band Brake Assembly		●		●
B28	Main Brake S Assembly		●		●
B29	Main Brake T Assembly		●		●
B30	T Brake Arm Assembly		●		●
B31	AC Head Assembly			●	
B32	Reel Base Assembly			●	
B37	Capstan Motor		●		●
B52	Capstan Belt		●		●
B54	Ground Brush Assembly			●	
B73	FE Head			●	
B86	F Brake Assembly		●		●
B132	Clutch Assembly		●		●
B133	Arm Idler Assembly		●		●

Note:

1. Clean all parts for the tape transport (Upper Drum with Video Head / Pinch Roller / ACE Head / FE Head) using 90% Isopropyl Alcohol.
2. After cleaning the parts, do all DECK ADJUSTMENTS.
3. For the reference numbers listed above, refer to Deck Exploded Views.

Cleaning

Cleaning of Video Head

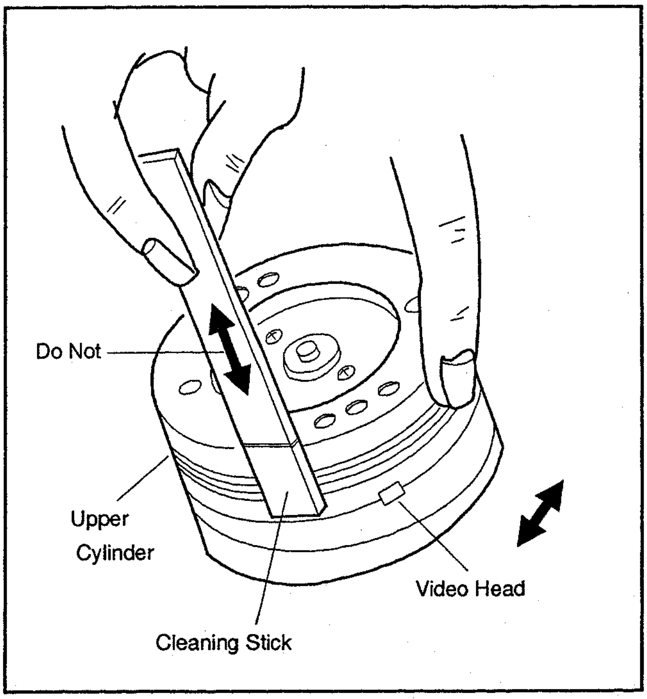
Clean the head with a head cleaning stick or chamois skin.

Procedure

1. Remove the top cabinet.
2. Put on a glove (thin type) to avoid touching the upper and lower drum with your bare hand.
3. Put a few drops of 90% Isopropyl alcohol on the head cleaning stick or on the chamois skin and, by slightly pressing it against the head tip, turn the upper drum to the right and to the left.

Notes:

1. The video head surface is made of very hard material, but since it is very thin, avoid cleaning it vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit.
3. Do not reuse a stained head cleaning stick or a stained chamois skin.



Cleaning of Audio Control Head

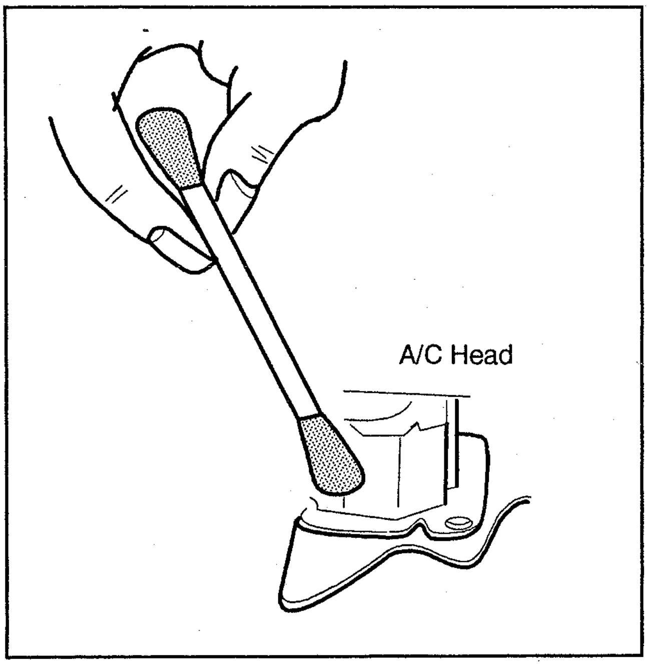
Clean the head with a cotton swab.

Procedure

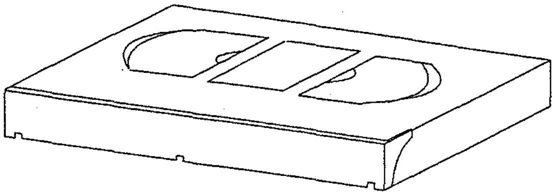
1. Remove the top cabinet.
2. Dip the cotton swab in 90% isopropyl alcohol and clean the audio control head. Be careful not to damage the upper drum and other tape running parts.

Notes:

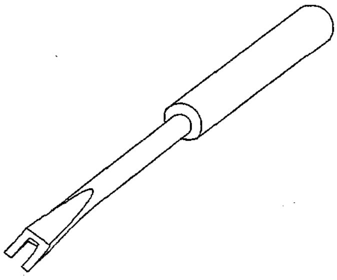
1. Avoid cleaning the audio control head vertically.
2. Wait for the cleaned part to dry thoroughly before operating the unit or damage may occur.



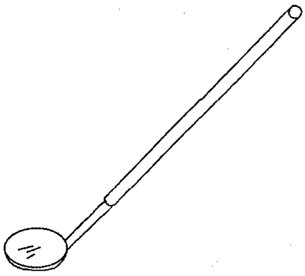
SERVICE FIXTURE AND TOOLS



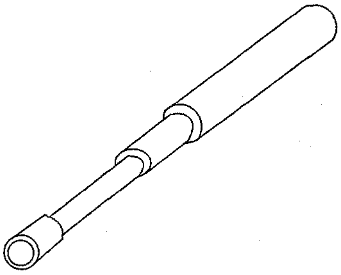
J-1-1, J-1-2



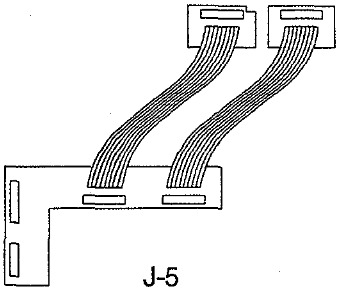
J-2-1, J-2-2



J-3



J-4



J-5

Ref. No.	Name	Part No.	Adjustment
J-1-1	Alignment Tape	F6-A	Head Adjustment of Audio Control Head
J-1-2	Alignment Tape	F6-N	Azimuth and X Value Adjustment of Audio Control Head / Adjustment of Envelope Waveform
J-2-1	Special Driver, Large	FSJ-0001	X Value
J-2-2	Special Driver, Small	FSJ-0006	Guide Roller
J-3	Mirror	FSJ-0004	Tape Transportation Check
J-4	Box Driver, Mx3	FSJ-0005	A/C Head Height
J-5	Deck Extention Cable	N1091XA	All Mechanical and Electrical Adjustments

Note:

Before starting any adjustment, take the Deck Assembly out of the cabinet and use J-5 to connect the Deck Assembly with the Main CBA.

MECHANICAL ALIGNMENT PROCEDURES

Service Information

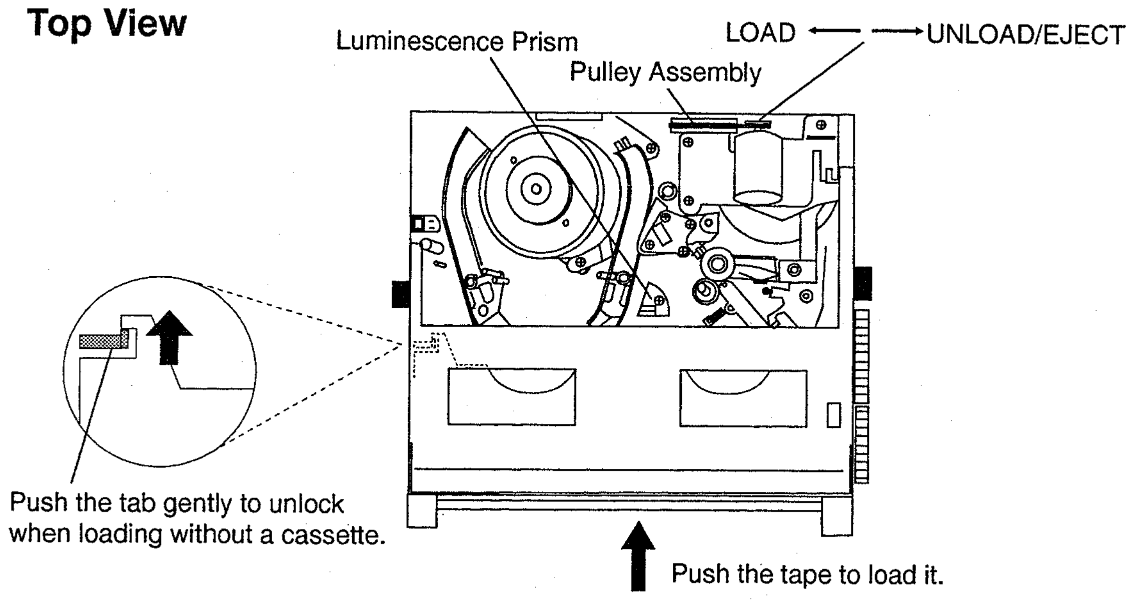
A. Method for Manual Tape Loading/Unloading of VCR.

To place the Cassette Holder in the down position, turn the Pulley Assembly clockwise as viewed from the back of the Deck. To place the Cassette Holder in the up position, turn the Pulley Assembly counter-clockwise as viewed from the back of the Deck.

B. How to place the Cassette Holder in the down position without a cassette tape.

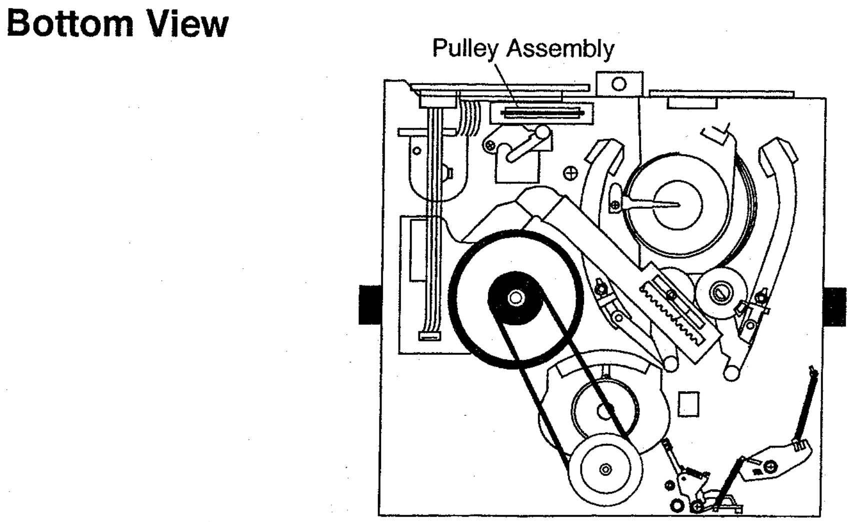
METHOD

1. Disconnect the AC Plug and remove the Top Cover.
2. Turn the Pulley Assembly clockwise as viewed from the back of the Deck.



Top View
Luminescence Prism
Pulley Assembly
LOAD
UNLOAD/EJECT
Push the tab gently to unlock when loading without a cassette.
Push the tape to load it.

Fig. M1



Bottom View
Pulley Assembly

Fig. M2

1. Tape Interchangeability Alignment (Final Alignment)

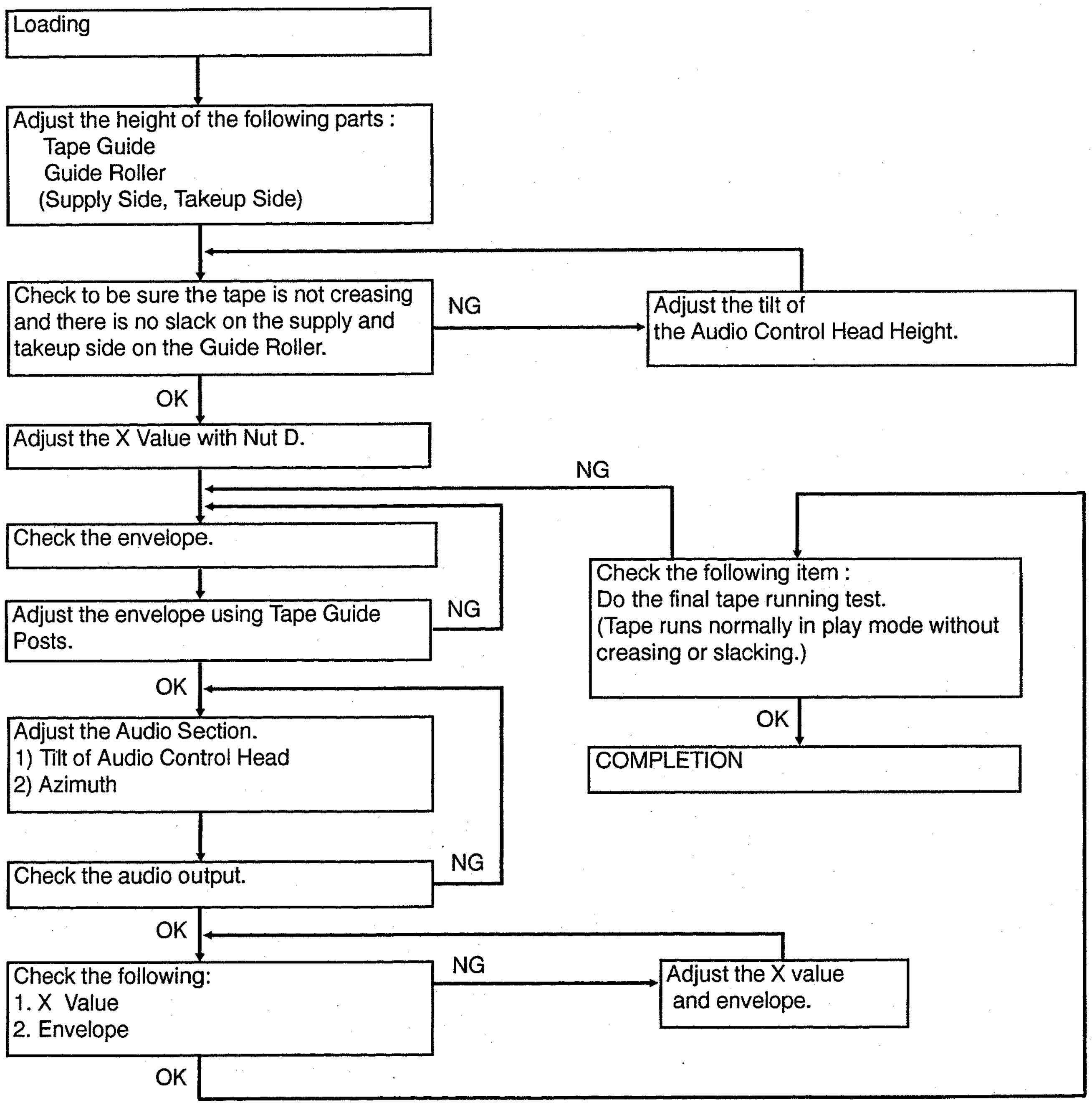
Note: To do these alignment procedures, be sure that the Tracking Control Circuit is set to the Neutral mode.

Equipment required :

Dual Trace Oscilloscope
VHS Alignment Tape (F6-A, F6-N)
Post Alignment Screwdriver
X-Position Alignment Fixture
Screwdriver (For the Tape Guide Rollers)
Box Driver M3

Note: After this Mechanical Alignment is completed, secure screw [C] shown in Fig.M6 with lock paint and do all Electrical Adjustment procedures.

Tape Running Alignment Flowchart


Loading
Adjust the height of the following parts : Tape Guide Guide Roller (Supply Side, Takeup Side)
Check to be sure the tape is not creasing and there is no slack on the supply and takeup side on the Guide Roller.
NG
Adjust the tilt of the Audio Control Head Height.
OK
Adjust the X Value with Nut D.
NG
Check the envelope.
Adjust the envelope using Tape Guide Posts.
NG
OK
Adjust the Audio Section. 1) Tilt of Audio Control Head 2) Azimuth
Check the audio output.
NG
OK
Check the following: 1. X Value 2. Envelope
NG
Adjust the X value and envelope.
OK
Check the following item : Do the final tape running test. (Tape runs normally in play mode without creasing or slacking.)
OK
COMPLETION

1-A. Preliminary Checking and Alignment of Tape Running

Purpose:

To make sure that the tape running is well stabilized.

Symptom of Misalignment:

If the tape runs unstable, the tape will be damaged.

1. Play back a cassette tape and check to see that the tape runs without creasing at Guide Rollers [2] and [3], and at points A and B on the lead surface. (Refer to Fig M3 and M4)
2. If creasing is apparent, align the height of the guide rollers by turning the top of Guide Rollers [2] and [3] with a Post Adjustment Screwdriver. (Refer to Fig. M3 and M5)
   Note: Before turning the Guide Rollers, loosen the Lock Screw using a lock screwdriver.

Note: Do not use an Alignment Tape for this procedure. If the unit is not correctly aligned, the tape may be damaged.

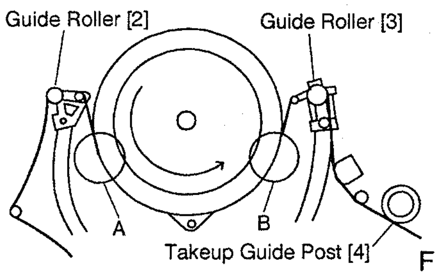

Guide Roller [2]
Guide Roller [3]
A
B
Takeup Guide Post [4]

Fig. M3

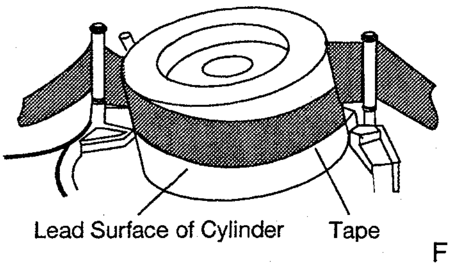

Lead Surface of Cylinder
Tape

Fig. M4

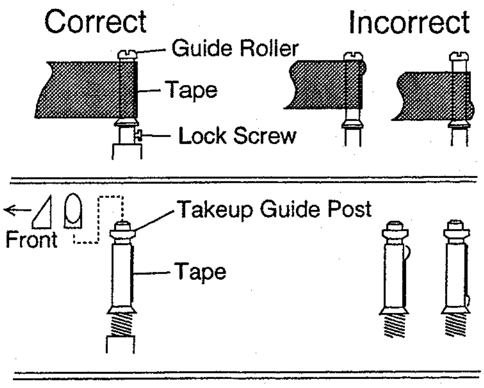

Correct
Incorrect
Guide Roller
Tape
Lock Screw
Front
Takeup Guide Post
Tape

Fig. M5

1-B. Preliminary Checking of Audio/ Control Head Height

Purpose :

To make sure that the tape runs properly along the Control Head.

Symptom of Misalignment:

If the control signal is not properly picked up, proper Servo Operation cannot be achieved.

The head height adjustment is required when the Audio/Control Head is replaced.
For final alignment, do the adjustments described in 1-C and 1-D.

Note: Play back a cassette tape. Looking at the lower edge of the Control Head with the tape in motion, make sure that the lower edge of the tape runs 0.15~0.25mm above the lower edge of the Control Head. If it does not run properly, turn Height Adjustment Nut [A] slightly in either direction as necessary to correct it. Turn clockwise, as viewed from the top, to lower the head and counterclockwise to raise it. (Refer to Fig. M6 and M7.)

1-C. Preliminary Checking of Tilt of Audio/Control Head

Purpose:

To confirm that the tape running is well stabilized, confirm that the signals on the tape are properly picked up by the Audio Head at the upper part and by the Control Head at the lower part.

Symptom of Misalignment:

If the tilt of the Audio/Control Head is poorly aligned, the tape will eventually be damaged.
Play back a cassette tape and confirm that there is no tape slack between Takeup Guide Post [4] in Fig. M3 and the Audio/Control Head. If there is any slack, align the Audio/Control Head by turning tilt adjustment screw [C] in Fig. M6 so that the tape has no slack.

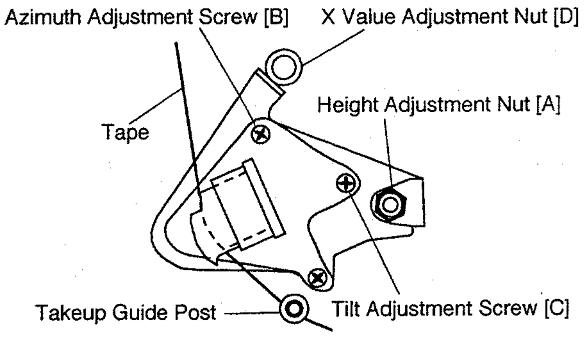

Azimuth Adjustment Screw [B]
X Value Adjustment Nut [D]
Height Adjustment Nut [A]
Tape
Takeup Guide Post
Tilt Adjustment Screw [C]

Fig. M6

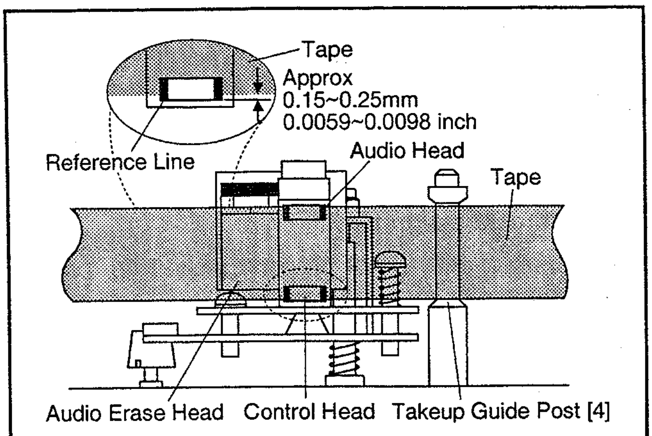


Fig. M7

1-D. Final Alignment of Audio/ Control Head Height

Purpose:

To align the position and height of the Audio/Control Head so that it meets the tape tracks properly.

Symptom of Misalignment:

If the position of the Audio/Control Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Confirm that there is no tape slack between the Takeup Guide Roller and the Audio/Control Head. If there is any tape slack, remove it by turning Tilt Adjustment screw [C]. Then realign the height of the Guide Rollers (Refer to 1-A).
3. Play back the Color Bar (1kHz, Audio) on the alignment tape (F6-A) and confirm that the audio signal output level is 1kHz. Finally, adjust Height Adjustment Nut [A] so that the output level is at maximum.(Fig. M6, Fig. M8[b])
4. Adjust Azimuth Adjustment Nut [B] so that the output level on the AC Voltmeter is at maximum.(Fig. M6)

Note: Secure screw [C] with lock paint after realignment.

Azimuth Alignment of Audio/Control Head

Purpose:

To correct the Azimuth alignment so that the Audio/Control Head angle meets tape tracks properly.

Symptom of Misalignment:

If the position of the Audio/Control Head is not properly aligned, the Audio S/N Ratio or Frequency Response will be poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Play back the Gray Scale (6kHz, audio) on the alignment tape (F6-N), and adjust Height Adjustment Nut [A] so that the output level on the AC Voltmeter or the waveform of the oscilloscope is at maximum. (Fig. M6, Fig. M8[a])

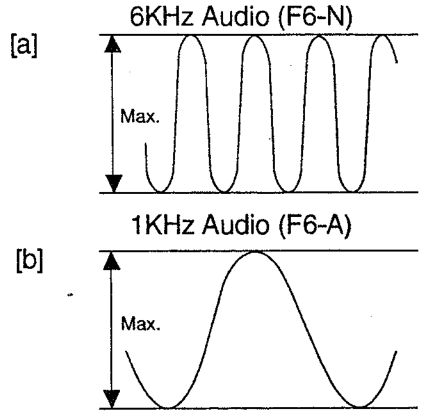


Fig. M8

1-E. X Value Alignment

Purpose:

To align the Horizontal Position of the Audio/Control Head.

Symptom of Misalignment:

If the Horizontal Position of the Audio/Control Head is not properly aligned, maximum envelope cannot be obtained at the Neutral mode of the Tracking Control Circuit.

1. Set the Tracking Control Circuit to the Neutral mode by pressing CH UP and DOWN buttons on VCR simultaneously.
2. Connect the oscilloscope to TP of C-PB on the Main CBA. Use TP of RF-SW as a trigger.
3. Play back the Gray Scale of the Alignment Tape (F6-N) and confirm that the PB FM signal is present.
4. Adjust X Value adjustment Nut [D] with the X Position Adj-Fixture so that the PB FM signal at the TP of C-PB or at the TP of A-OUT is maximum. (Fig.M9)

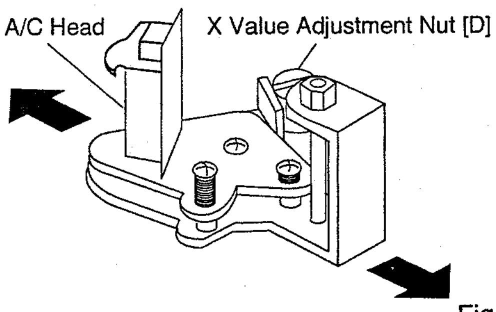


Fig. M9

1-F. Final Checking/Adjustment of Envelope Waveform

Purpose:

To achieve a satisfactory picture and precise tracking.

Symptom of Misalignment:

If the envelope output is poor, noise will appear in the picture. The tracking will then lose precision and the playback picture will be distorted by any slight variation of the Tracking Control.

1. Set the Tracking Control Circuit to the Neutral mode by pressing both CH UP and DOWN buttons on VCR simultaneously.
2. Connect the oscilloscope to TP of C-PB on the Main CBA. Use TP of RF-SW as a trigger.
3. Play back the Gray Scale on the Alignment Tape (F6-N). Adjust the height of Guide Rollers [2] and [3] (Fig.M3) watching the oscilloscope display so that the envelope becomes as flat as possibile. If adjustment is required, turn the top of the Guide Roller with the Post Adjustment Screwdriver.
4. When the envelope is as shown in Fig. M10, adjust the height of Guide Roller [2] (Refer to Fig.M3) so that the waveform looks like the one shown in Fig. M12.
5. When the envelope is as shown in Fig. M11, adjust the height of Guide Roller [3] (Refer to Fig.M3) so that the waveform looks like the one shown in Fig. M12.
6. When Guide Rollers [2] and [3] (Refer to Fig.M3) are aligned properly, there is no envelope drop either at the beginning or end of track as shown in Fig. M12.

Note: Upon completion of the adjustment of Guide Rollers [2] and [3] (Refer to Fig.M3), tighten the Lock Screws on these Guide Rollers [2] and [3], using a lock screw wrench. Then check the X VALUE by pushing the Tracking Control Up or Down buttons alternately, to check the symmetry of the envelope. If required, redo the "X VALUE ALIGNMENT." Secure screw [C] shown in Fig.M6 with lock paint.

Dropping envelope level at the beginning of track.

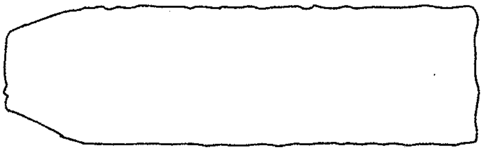


Fig. M10

Dropping envelope level at the end of track.

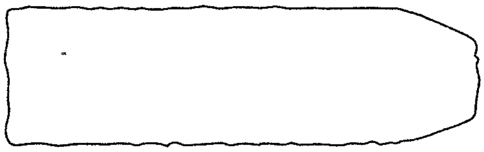


Fig. M11

Envelope is adjusted properly. (No envelope drop)

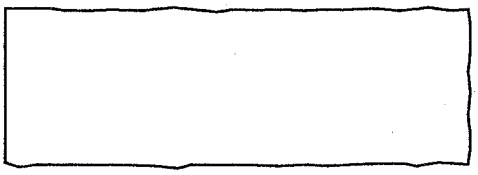


Fig. M12

DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM

Main Mechanism

Before following the procedures described below, be sure to:

1. Remove the deck assembly from the cabinet.
   (Refer to CABINET DISASSEMBLY INSTRUCTIONS in Section 1.)
2. Remove Front Loading Assembly from the main mechanism of the deck assembly. (See Fig. DM1.)

All the following procedures, including those for adjustment and replacement of parts, should be done in Eject mode; see the positions of [32] and [33] in Fig. DM3 on page 2-4-4. When reassembling, follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Motor Holder Assembly	T	DM3 DM5 DM6	3(S-2), *(P-2) Loading Belt	(+)
[2]	[1]	Loading Motor Assembly	T	DM2 DM3 DM5	2(S-3), CN2902	
[3]	[1]	Cassette Drive Lever Assembly	T	DM3 DM5		(+)
[4]	[1]	Pinch Roller Arm Assembly	T	DM3 DM5	(C-1) Pinch Roller Spring	
[5]	[1]	Pinch Arm Assembly	T	DM3 DM5		
[6]	[6]	Mode SW CBA	B	DM4 DM8	*(L-1), Stopper Boss	
[7]	[7]	Joint CBA	T/B	DM2 DM3 DM4 DM7 DM8	(S-4), CN2801 CN2902, *CL2901 CL2902	
[8]	[1]	Cam	T	DM3 DM5		(+) Follow the alignment instruction in Fig. DM5.
[9]	[1]	Pulley Assembly	T	DM3 DM6	(W-1), Loading Belt	(+)
[10]	[10]	Head Amp CBA	T/B	DM2 DM3 DM4 DM8	(S-5), (S-6), CN02, CN03, CL02	
[11]	[11]	Arm Idler Assembly	T	DM3 DM9	Clutch Bushing	(+)
[12]	[12]	Clutch Assembly	B	DM4 DM9	(C-2), (W-2) Capstan Belt	
[13]	[9]	Capstan Motor Unit	B	DM4 DM10	3(S-7)	
[14]	[1]	M Lever Holder	T	DM3 DM11	(S-8)	
[15]	[1]	Kick Arm Holder	B	DM4 DM11	Kick Arm Spring	
[16]	[15]	Kick Arm	B	DM4 DM11	Bushing	
[17]	[17]	Mode Change Lever	T	DM3 DM12	*2(L-2)	(+)
[18]	[1]	Main Lever Assembly	T	DM3 DM15	*(L-3)	
[19]	[19]	Tape Guide Assembly	T	DM3 DM15	*(P-3), *(L-4)	Keep the distance specified in Fig. DM15.
[20]	[20]	ACE Head Assembly	T	DM3 DM14	Nylon Nut Head Height Adjustment Spring	Keep the distances specified in Fig. DM14.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[21]	[21]	Tension Lever Sub Assembly	T B	DM3 DM13 DM22	*(L-5) *(P-7)	
[22]	[21]	Band Brake Sub Assembly	T	DM3 DM13	(S-9), *(L-6)	
[23]	[17]	M Brake (S) Lever	T	DM3 DM16		
[24]	[17]	M Brake (S)	T	DM3 DM16	*(P-4), *(L-7)	When reassembling, hook the spring (P-4) after installation of Mode Change Lever.
[25]	[17]	S Brake Arm	T	DM3 DM16	*(P-5)	When reassembling, hook the spring (P-5) after installation of Mode Change Lever.
[26]	[17]	M Brake (T) Assembly	T	DM3 DM16		
[27]	[17]	T Brake Arm Assembly	T	DM3 DM16	*(P-6)	When reassembling, hook the spring (P-6) after installation of Mode Change Lever.
[28]	[17]	Reel Base Assembly T	T	DM3 DM17	Poly Slider Washer	(+)
[29]	[17]	Reel Base Assembly S	T	DM3 DM17	Poly Slider Washer	(+)
[30]	[30]	Ground Brush Assembly	B	DM4 DM18 DM19	(S-10)	When reassembling, make sure that the brush is within 1 mm (0.04 inch) of center of shaft.
[31]	[10],[30] Only	Cylinder Assembly	T	DM3 DM18	3(S-11)	
[32]	[1]	Moving Guide Assembly	T	DM3 DM20		
[33]	[1]	Moving Guide T Assembly	T	DM3 DM20		
[34]	[34]	FE Head	T	DM3 DM20	(S-12)	
[35]	[35]	Main Prism	T	DM3 DM20	(S-13)	
[36]	[1]	Loading Arm M Assembly	B	DM4 DM21	(C-3)	(+)
[37]	[1]	Loading Gear A	B	DM4 DM21		(+)
[38]	[1]	Loading Gear B	B	DM4 DM21		(+)
[39]	[39]	BT Drive Arm	B	DM4 DM22	(S-14), *(P-7), *(P-8)	
[40]	[40]	Rec Arm	B	DM4 DM22	(S-15)	

↓ ① ↓ ② ↓ ③ ↓ ④ ↓ ⑤ ↓ ⑥ ↓ ⑦

①: Follow steps in sequence. When reassembling, follow the steps in reverse order.

These numbers are also used as identification (location) No. of parts in the figures.

②: Indicates the part to start disassembling with in order to disassemble the part in column (1).

③: Name of the part

④: Location of the part
T=Top B=Bottom R=Right L=Left

⑤: Figure Number

⑥: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.

P=Spring, W=Washer, C=Cut Washer, S=Screw
L=Locking Tab

*=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(C-2) = two Cut Washers (C-2)
2(L-2) = two Locking Tabs (L-2)

⑦: Adjustment Information for Installation

(+): Refer to Deck Exploded Views for lubrication information.

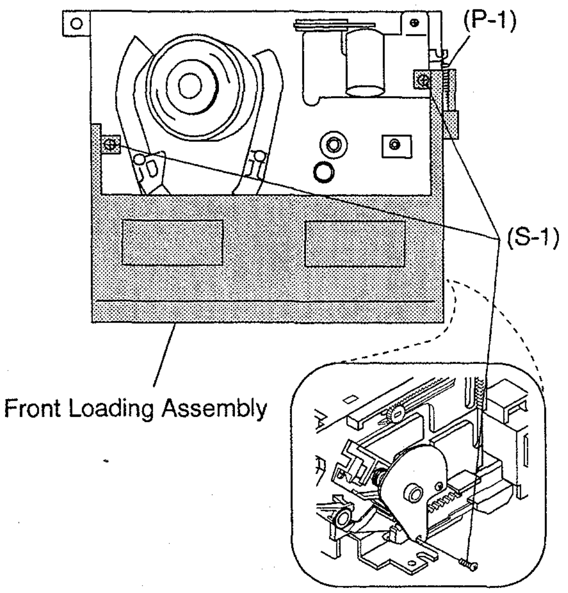

(P-1)
(S-1)
Front Loading Assembly

Fig. DM1

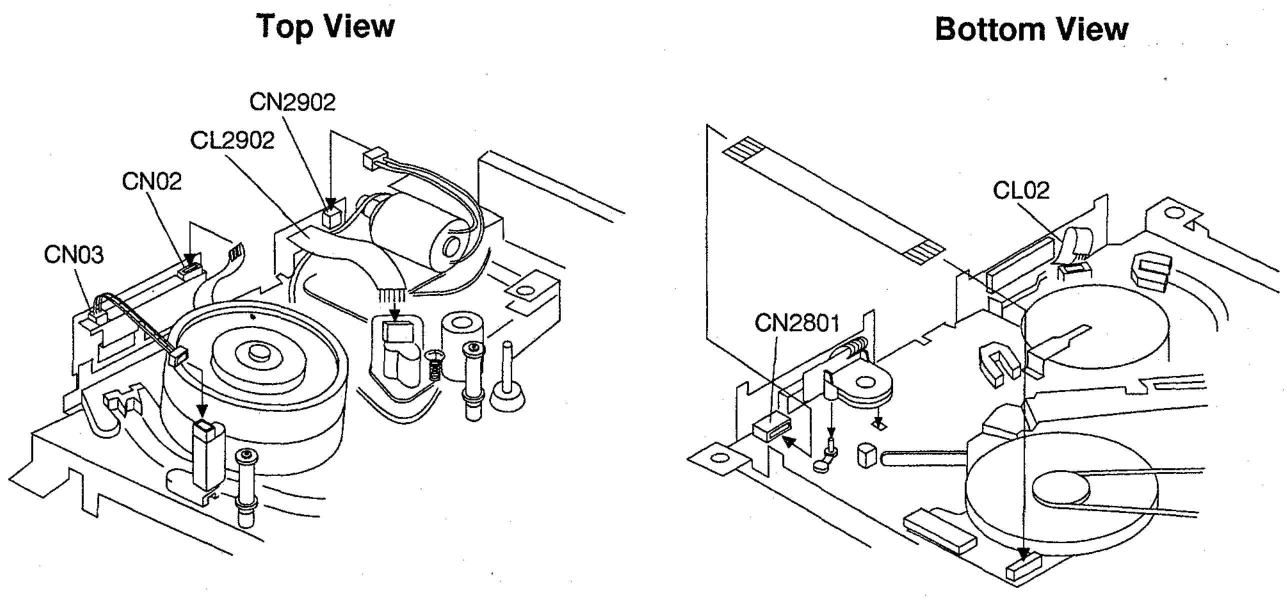

Top View
CN2902
CL2902
CN02
CN03
Bottom View
CL02
CN2801

Fig. DM2

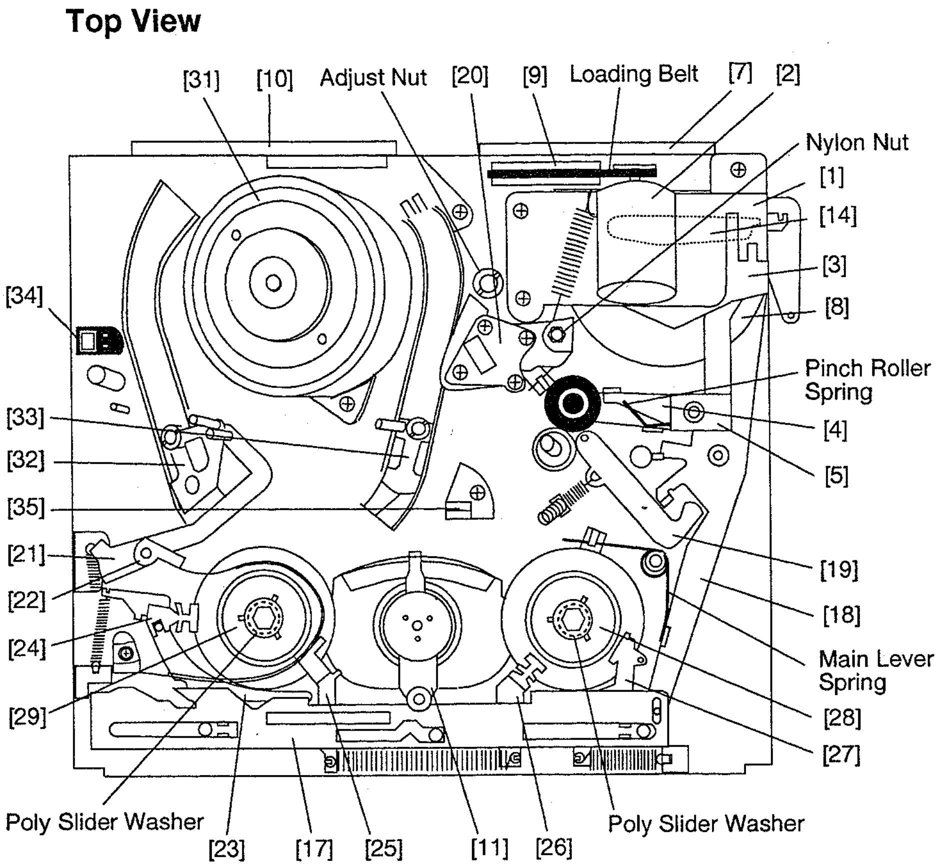

Top View
[31]
[10]
Adjust Nut
[20]
[9]
Loading Belt
[7]
[2]
Nylon Nut
[1]
[14]
[3]
[8]
Pinch Roller Spring
[4]
[5]
[19]
[18]
Main Lever Spring
[28]
[27]
[34]
[33]
[32]
[35]
[21]
[22]
[24]
[29]
Poly Slider Washer
[23]
[17]
[25]
[11]
[26]
Poly Slider Washer

Fig. DM3

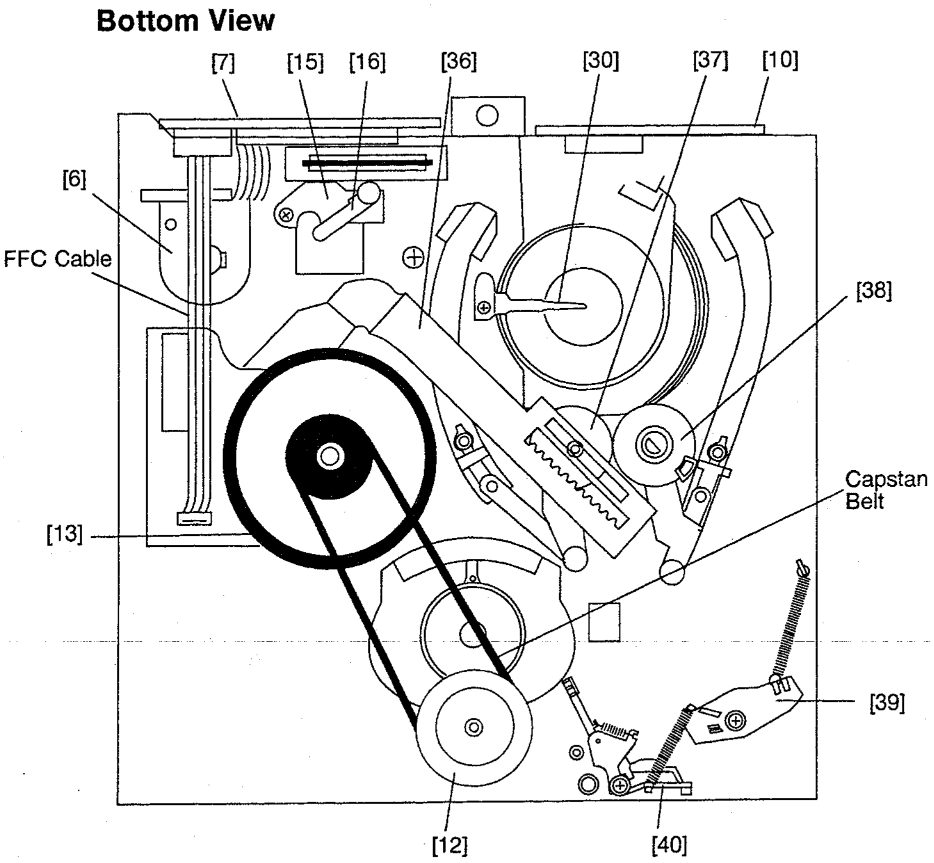
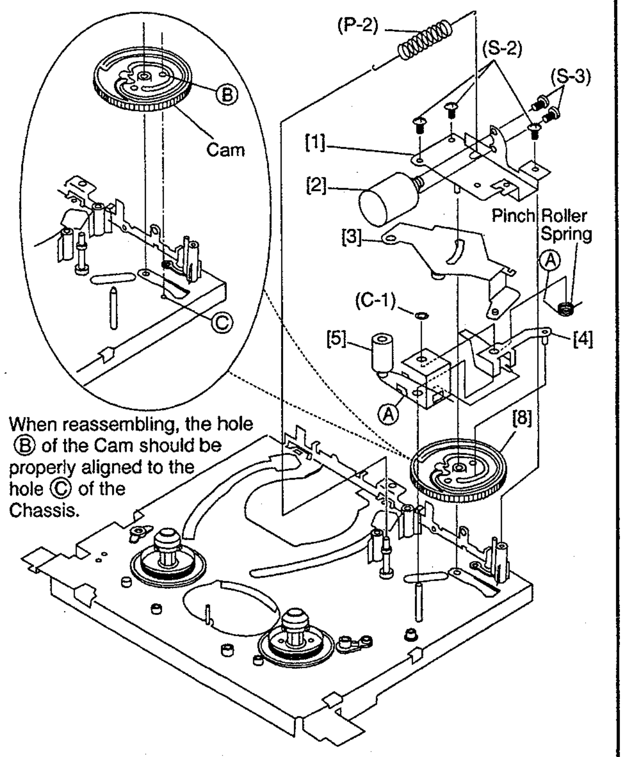

Bottom View
[7]
[15]
[16]
[36]
[30]
[37]
[10]
[6]
FFC Cable
[38]
Capstan Belt
[13]
[39]
[12]
[40]

Fig. DM4


(P-2)
(S-2)
(S-3)
[1]
[2]
[3]
Pinch Roller Spring
Ⓐ
(C-1)
[5]
[4]
Ⓐ
[8]
Ⓑ
Cam
Ⓒ

When reassembling, the hole Ⓑ of the Cam should be properly aligned to the hole Ⓒ of the Chassis.

Fig. DM5

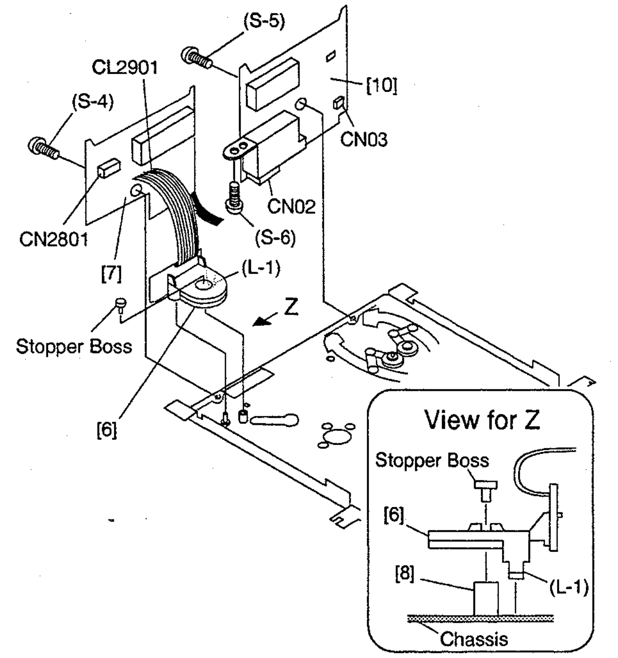
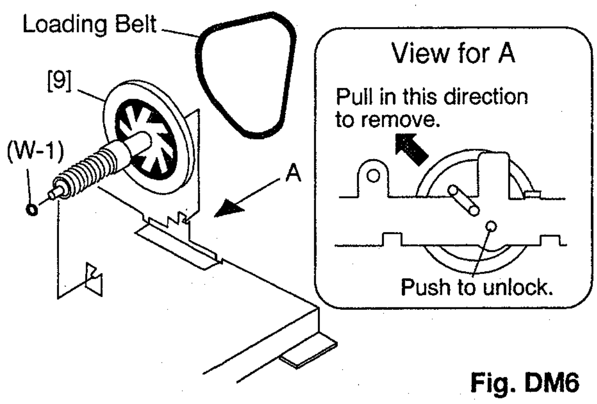

(S-5)
CL2901
[10]
(S-4)
CN03
CN02
CN2801
(S-6)
[7]
(L-1)
Z
Stopper Boss
[6]
View for Z
Stopper Boss
[6]
[8]
(L-1)
Chassis

Fig. DM8


Loading Belt
[9]
(W-1)
A
View for A

Pull in this direction to remove.

Push to unlock.

Fig. DM6

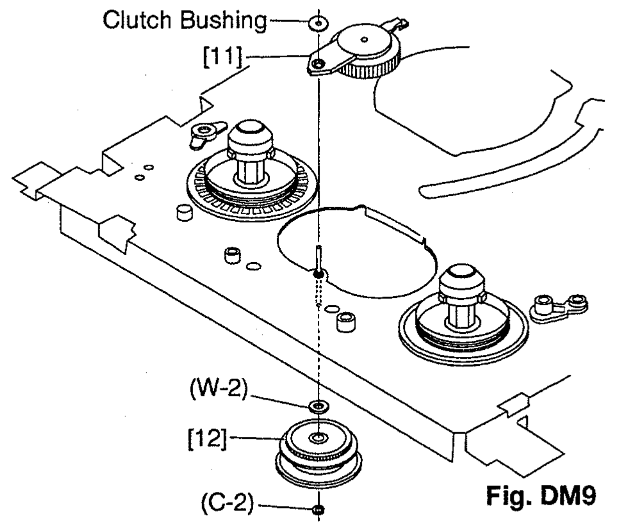

Clutch Bushing
[11]
(W-2)
[12]
(C-2)

Fig. DM9

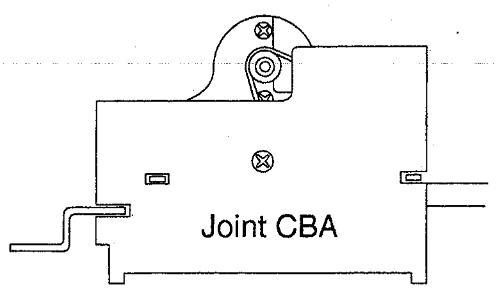


Fig. DM7

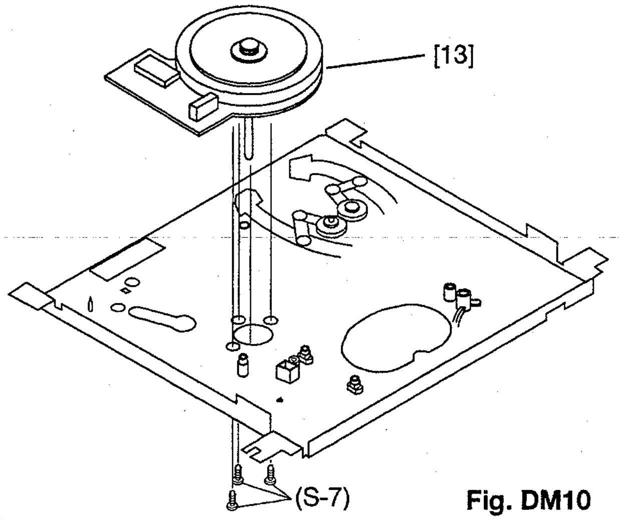
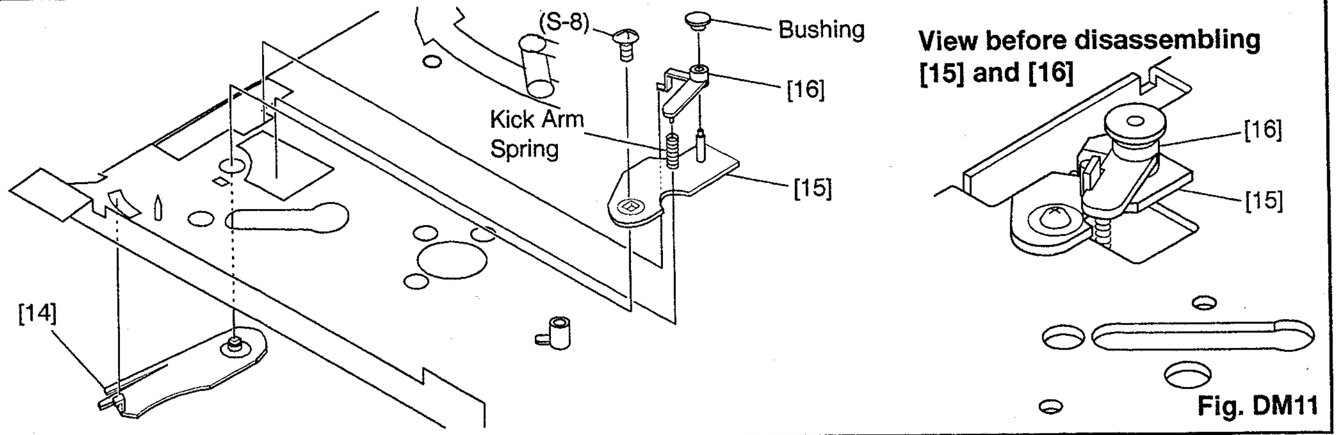


Fig. DM10


View before disassembling [15] and [16]

(S-8)
Bushing
[16]
Kick Arm Spring
[15]
[14]
[16]
[15]

Fig. DM11

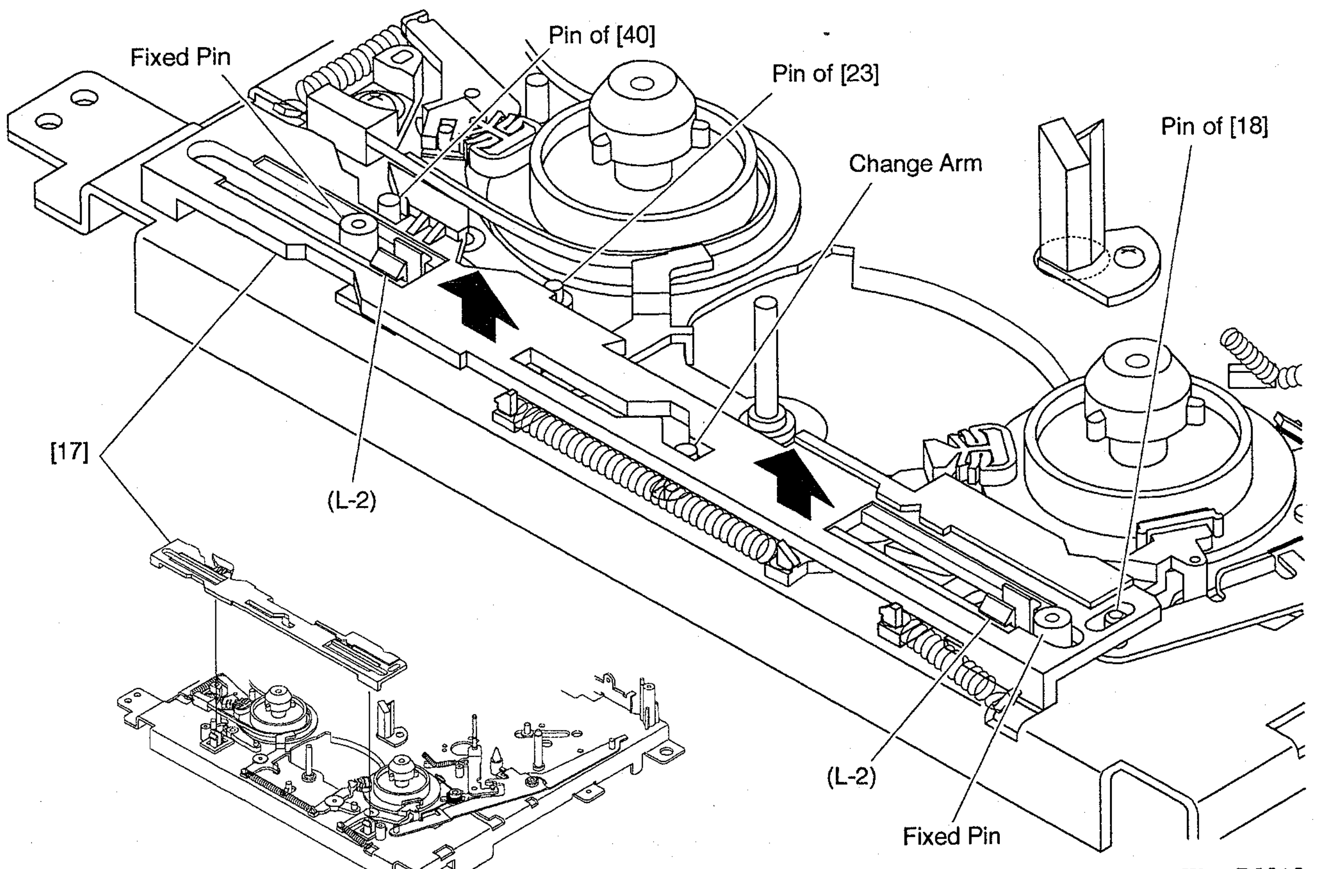
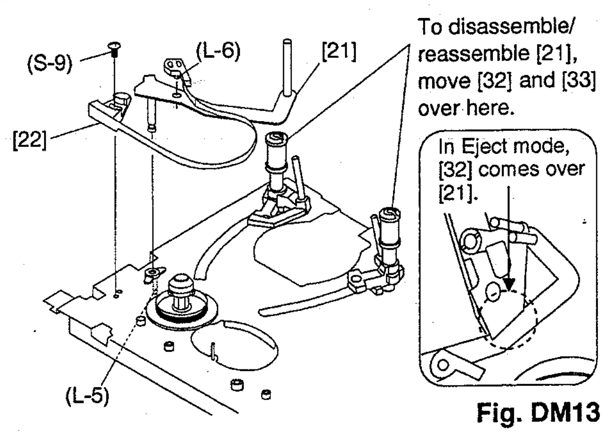

Fixed Pin
Pin of [40]
Pin of [23]
Pin of [18]
Change Arm
[17]
(L-2)
(L-2)
Fixed Pin

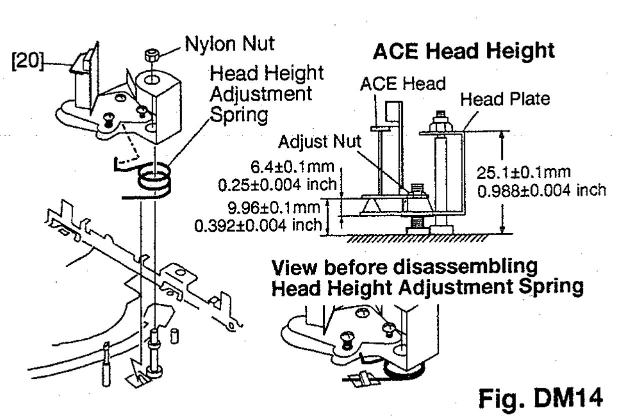
Fig. DM12


To disassemble/ reassemble [21], move [32] and [33] over here.

In Eject mode, [32] comes over [21].

(S-9)
(L-6)
[21]
[22]
(L-5)

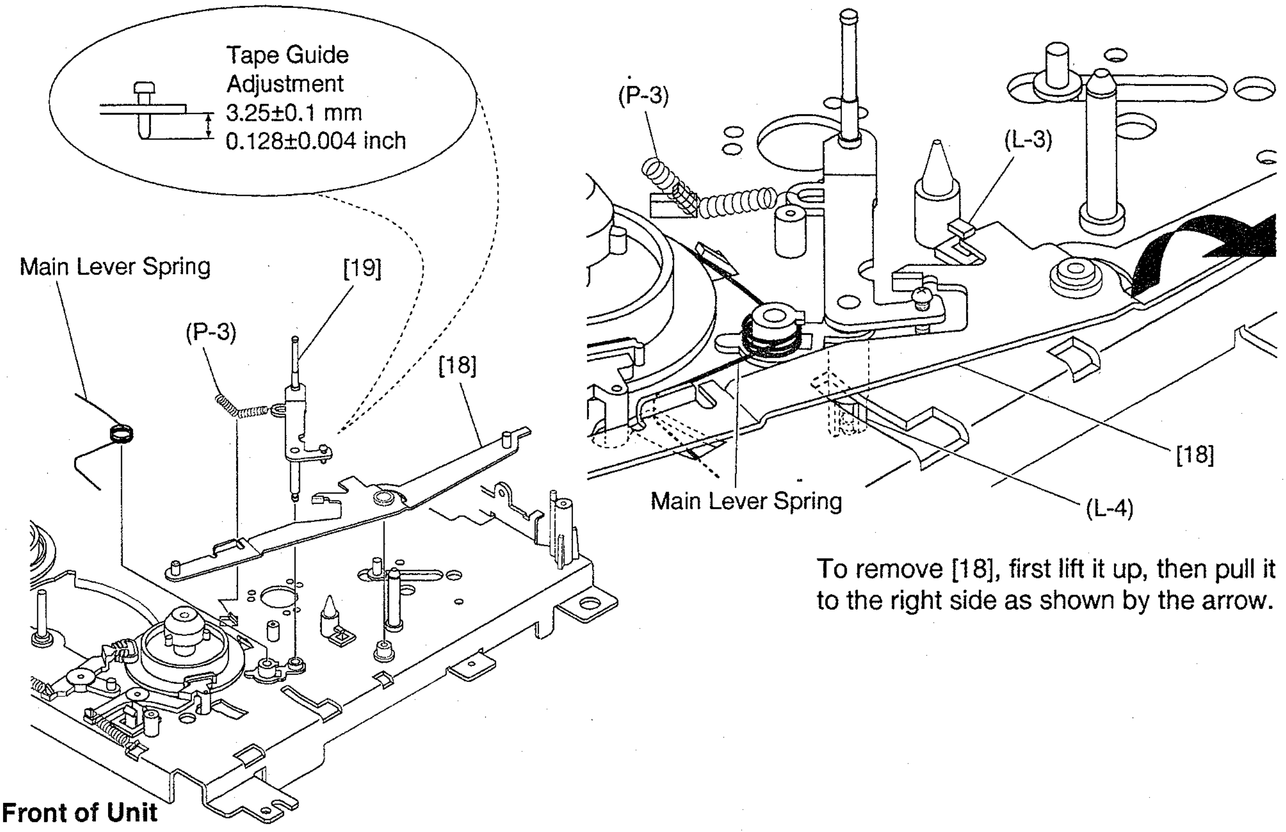
Fig. DM13


ACE Head Height

View before disassembling Head Height Adjustment Spring

[20]
Nylon Nut
Head Height Adjustment Spring
ACE Head
Head Plate
Adjust Nut
6.4±0.1mm
0.25±0.004 inch
9.96±0.1mm
0.392±0.004 inch
25.1±0.1mm
0.988±0.004 inch

Fig. DM14


Tape Guide
Adjustment
3.25±0.1 mm
0.128±0.004 inch
Main Lever Spring
[19]
(P-3)
[18]
Front of Unit
(P-3)
(L-3)
[18]
Main Lever Spring
(L-4)

To remove [18], first lift it up, then pull it to the right side as shown by the arrow.

Fig. DM15

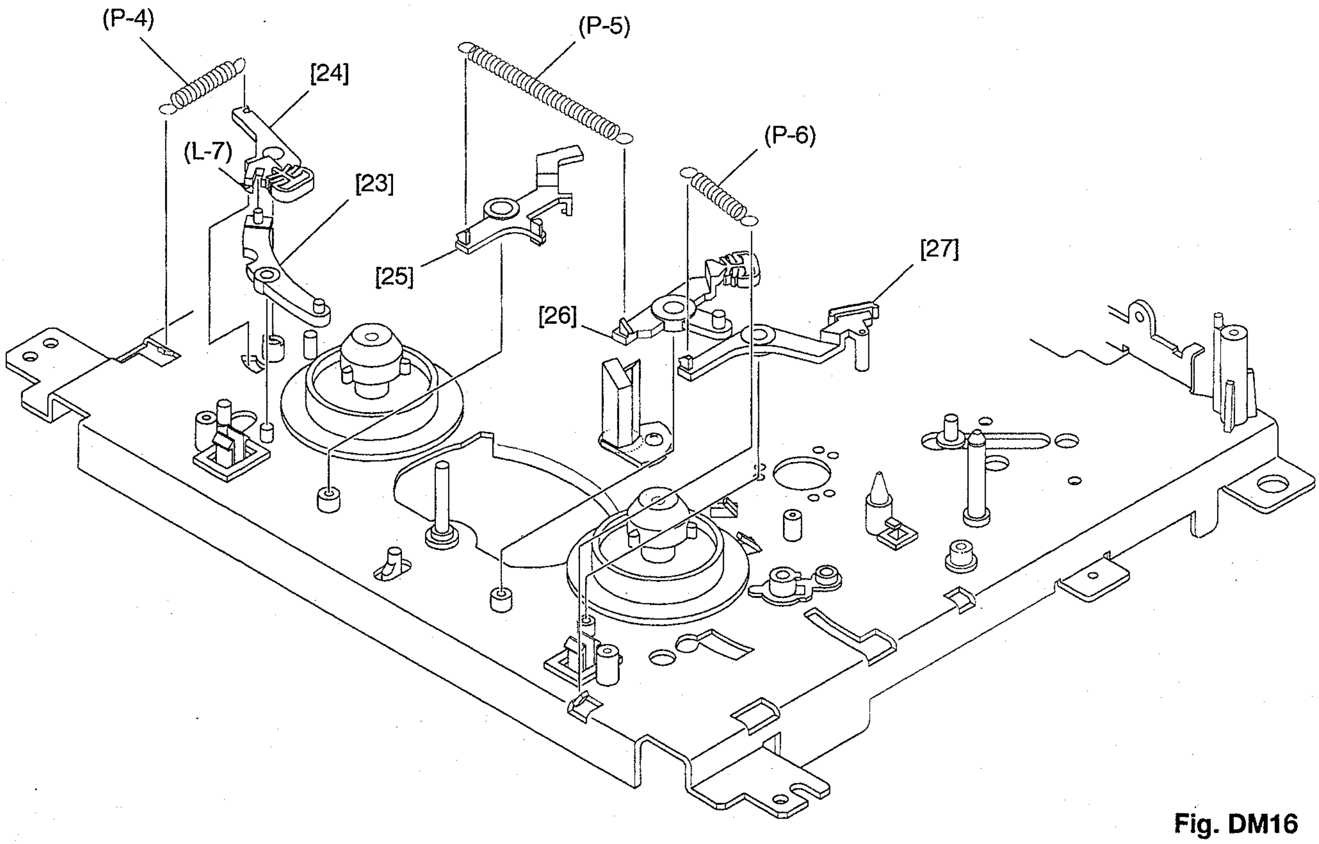
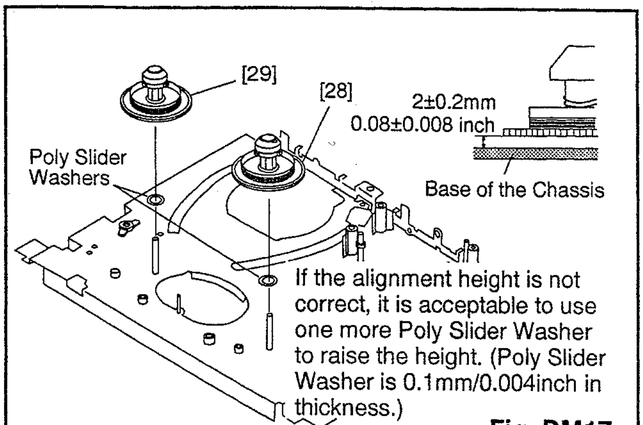

(P-4)
[24]
(L-7)
[23]
(P-5)
[25]
(P-6)
[27]
[26]

Fig. DM16


[29]
[28]
2±0.2mm
0.08±0.008 inch
Base of the Chassis
Poly Slider Washers

If the alignment height is not correct, it is acceptable to use one more Poly Slider Washer to raise the height. (Poly Slider Washer is 0.1mm/0.004inch in thickness.)

Fig. DM17

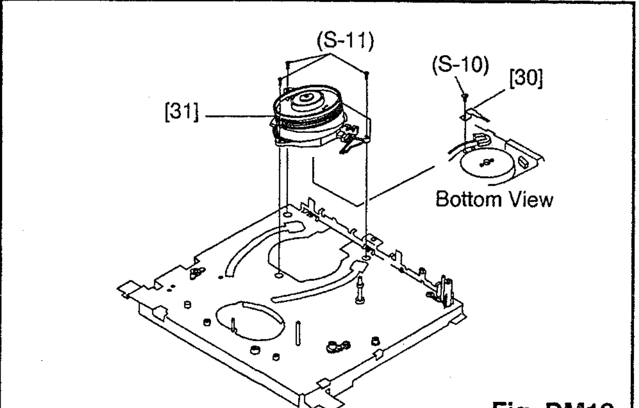

(S-11)
(S-10)
[30]
[31]
Bottom View

Fig. DM18

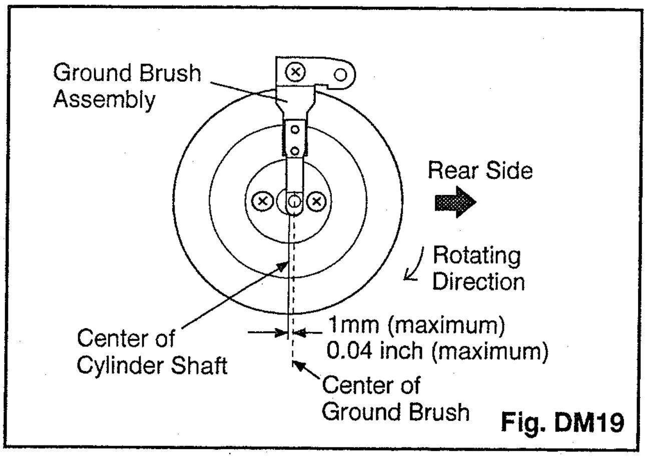

Ground Brush Assembly
Rear Side
Rotating Direction
Center of Cylinder Shaft
1mm (maximum)
0.04 inch (maximum)
Center of Ground Brush

Fig. DM19

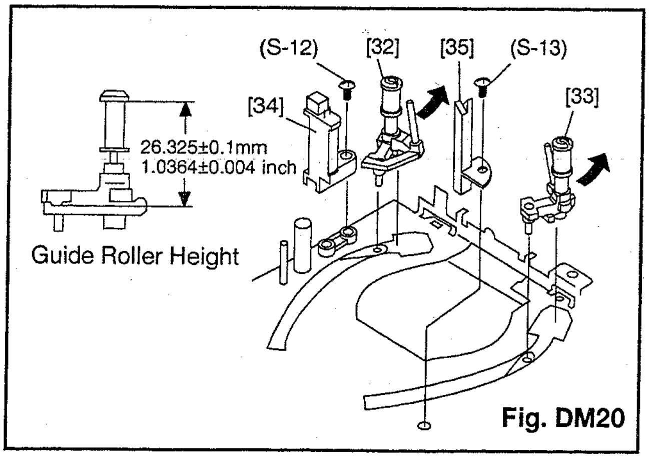
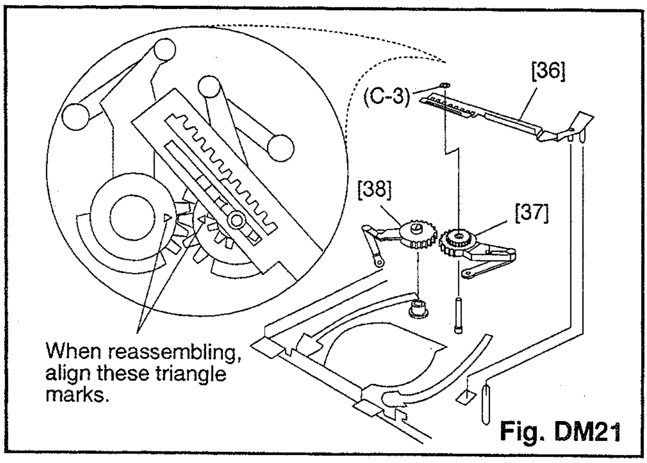

(S-12)
[32]
[35]
(S-13)
[34]
[33]
26.325±0.1mm
1.0364±0.004 inch
Guide Roller Height

Fig. DM20



When reassembling, align these triangle marks.

Fig. DM21

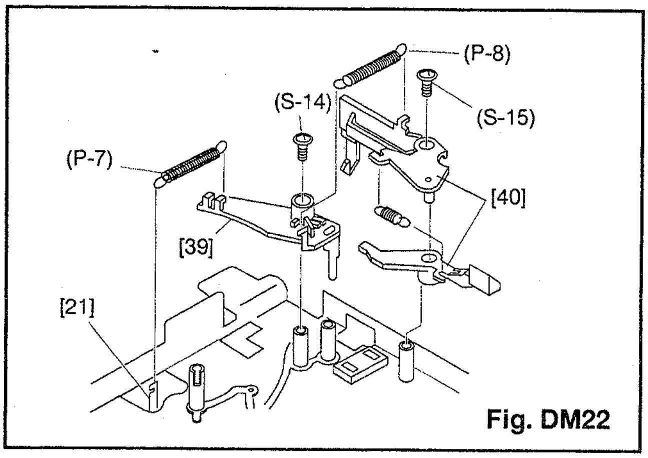

(P-8)
(S-14)
(S-15)
(P-7)
[40]
[39]
[21]

Fig. DM22

Front Loading Assembly

Before following the procedures described below, be sure to remove Front Loading Assembly from the main mechanism of the deck assembly. (See Fig. DM1.) When reassembling, start with the unit in Cassette-in mode and follow the steps in reverse order.

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE/*UNHOOK/ UNLOCK/RELEASE/ UNPLUG/DESOLDER	ADJUSTMENT CONDITION
[1]	[1]	Deck Plate	T	DM26	(S-1)	
[2]	[2]	Gear Supporter	L	DM26	3(S-2)	
[3]	[3]	Door Opener	R	DM24 DM25	*(L-1) Door Opener Spring	
[4]	[3]	Drive Gear Reinforcement	R	DM26 DM27	(S-3)	
[5]	[3]	Cassette Drive Gear	R	DM26 DM27 DM28	Cassette Drive Gear Spring	
[6]	[3]	F Door Opener R	R	DM26	*(L-2) F Door Opener R Spring	
[7]	[3]	Rack	R	DM26 DM28		
[8]	[3]	Slider Gear (2 pieces)	T	DM26	2(C-1)	(+)
[9]	[3]	Slider Shaft	T	DM26		
[10]	[3]	Cassette Holder Assembly	T	DM26 DM27 DM29		
[11]	[11]	Mirror Holder (2 pieces)	L/R	DM26		
[12]	[12]	Release Bush (Holder)	R	DM26	*2(L-3)	

↓ ① ↓ ② ↓ ③ ↓ ④ ↓ ⑤ ↓ ⑥ ↓ ⑦

①: Follow steps in sequence. When reassembling, follow the steps in reverse order.
These numbers are also used as identification (location) No. of parts in the figures.

②: Indicates the part to start disassembling with in order to disassemble the part in column 1.

③: Name of the part

④: Location of the part: T=Top B=Bottom R=Right L=Left

⑤: Figure Number

⑥: Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
P=Spring, W=Washer, C=Cut Washer, S=Screw, *=Unhook, Unlock, Release, Unplug, or Desolder
e.g. 2(C-2) = two Cut Washers (C-2), 2(L-2) = two Locking Tabs (L-2)

⑦: Adjustment Information for Installation (+): Refer to Deck Exploded Views for lubrication information.

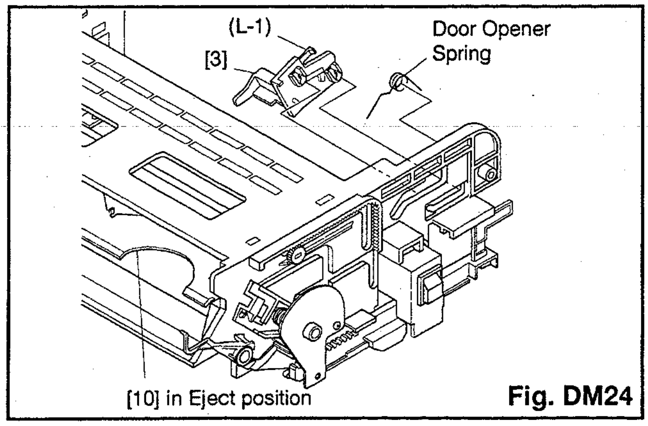


Fig. DM24

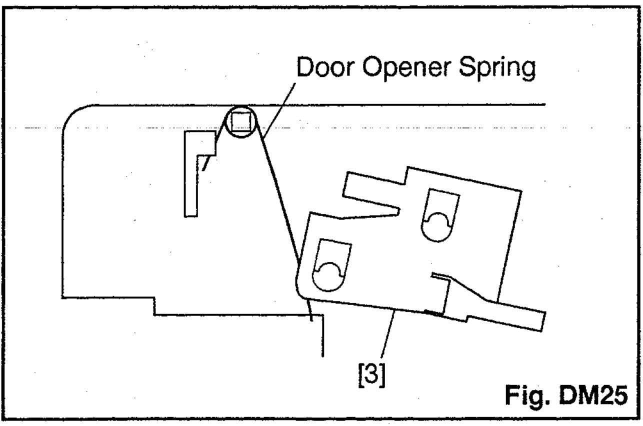


Fig. DM25

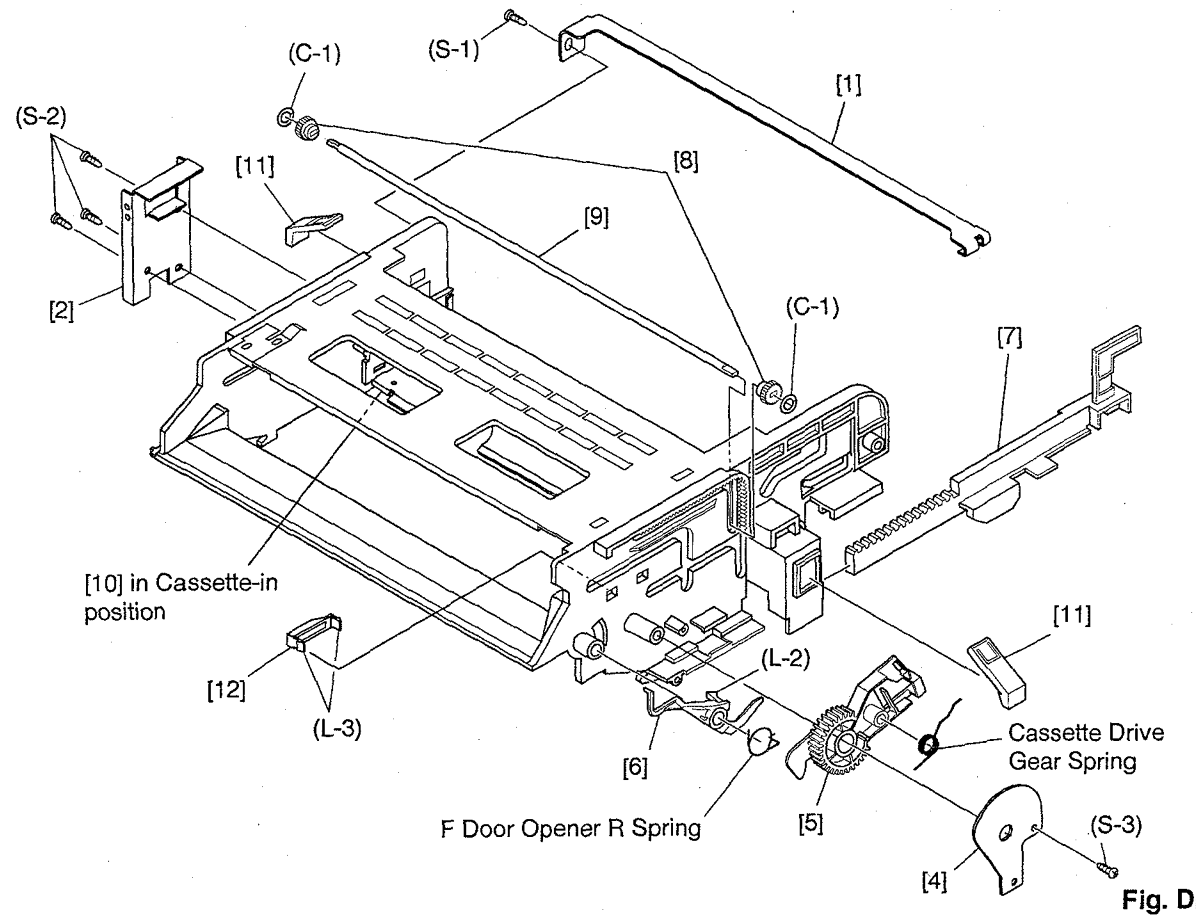
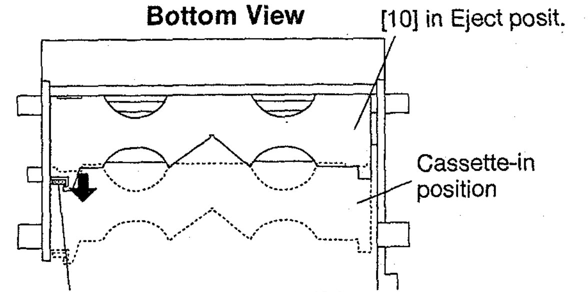

(C-1)
(S-1)
[1]
(S-2)
[11]
[8]
[9]
[2]
(C-1)
[7]
[10] in Cassette-in position
[11]
(L-2)
[12]
(L-3)
Cassette Drive Gear Spring
[6]
[5]
F Door Opener R Spring
(S-3)
[4]

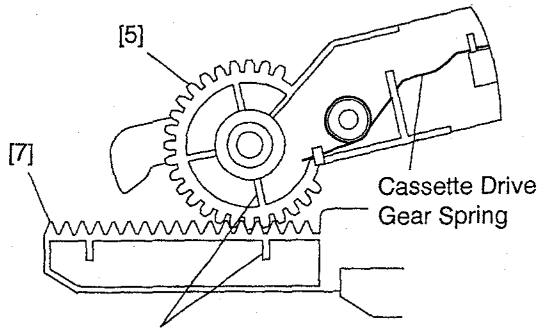
Fig. DM26

Before removing Parts [4] to [10], shift [10] to Cassette-in position.


Bottom View
[10] in Eject posit.
Cassette-in position

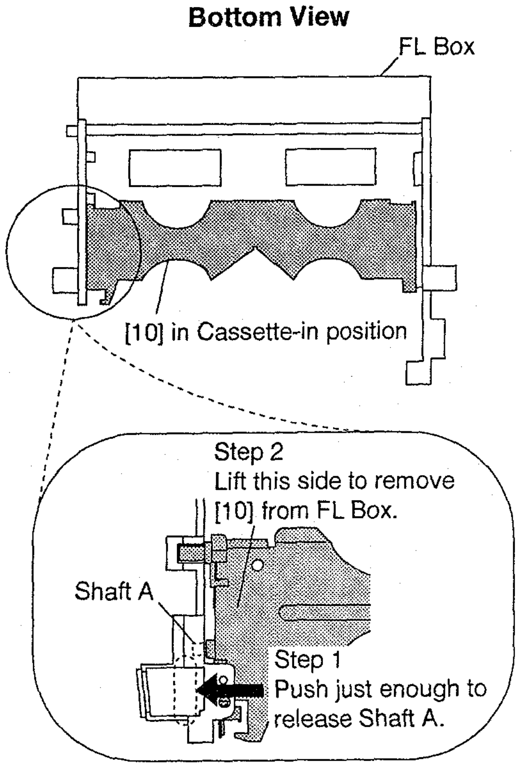
Pull this tab gently to unhook [10] from Eject position.

Fig. DM27


[5]
[7]
Cassette Drive Gear Spring

When reassembling, align these ribs as shown.

Fig. DM28


Bottom View
FL Box
[10] in Cassette-in position
Shaft A

Step 2
Lift this side to remove [10] from FL Box.

Step 1
Push just enough to release Shaft A.

Fig. DM29

ALIGNMENT PROCEDURES OF MECHANISM

The following procedures describe how to align the individual gears and levers that make up the tape loading/unloading mechanism. Since information about the state of the mechanism is provided to the System Control Circuit only through the Mode Switch, it is essential that the correct relationship between individual gears and levers be maintained.
All alignments are to be performed with the mechanism in Eject mode, in the sequence given. Each procedure assumes that all previous procedures have been completed.

IMPORTANT:

If any one of these alignments is not performed properly, even if off by only one tooth, the unit will unload or stop and it may result in damage to the mechanical or electrical parts.

Alignment points in Eject Position

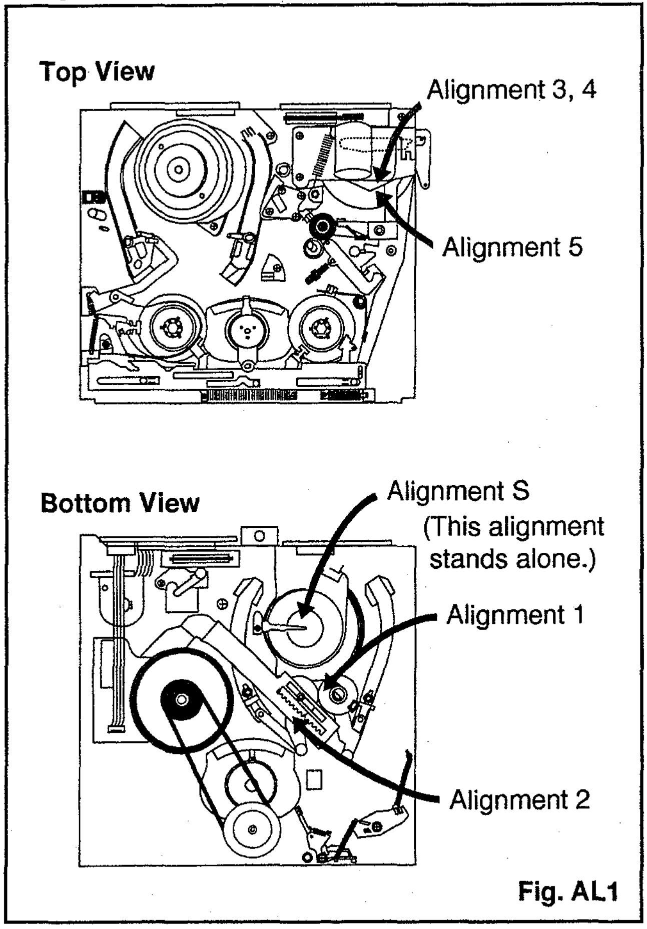

Top View
Alignment 3, 4
Alignment 5
Bottom View
Alignment S
(This alignment stands alone.)
Alignment 1
Alignment 2

Fig. AL1

Alignment 1

Loading Gears, A and B

1. Install Loading Gears A and B so that their triangle marks point to each other as shown in Fig. AL2.

Alignment 2

Loading Arm M Assembly

1. Keeping Alignment 1 correct with the two triangles pointing to each other, install Loading Arm M Assembly so that its tooth with yet another triangle mark is in the position to align with Loading Gear A and the center of the shaft. See Fig. AL2.

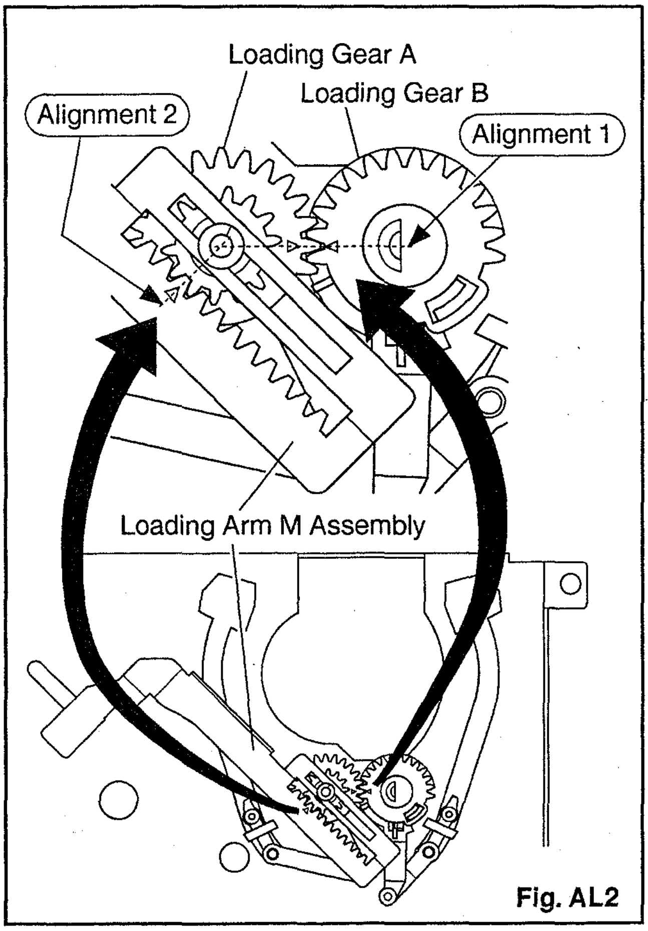

Loading Gear A
Loading Gear B
Alignment 2
Alignment 1
Loading Arm M Assembly

Fig. AL2

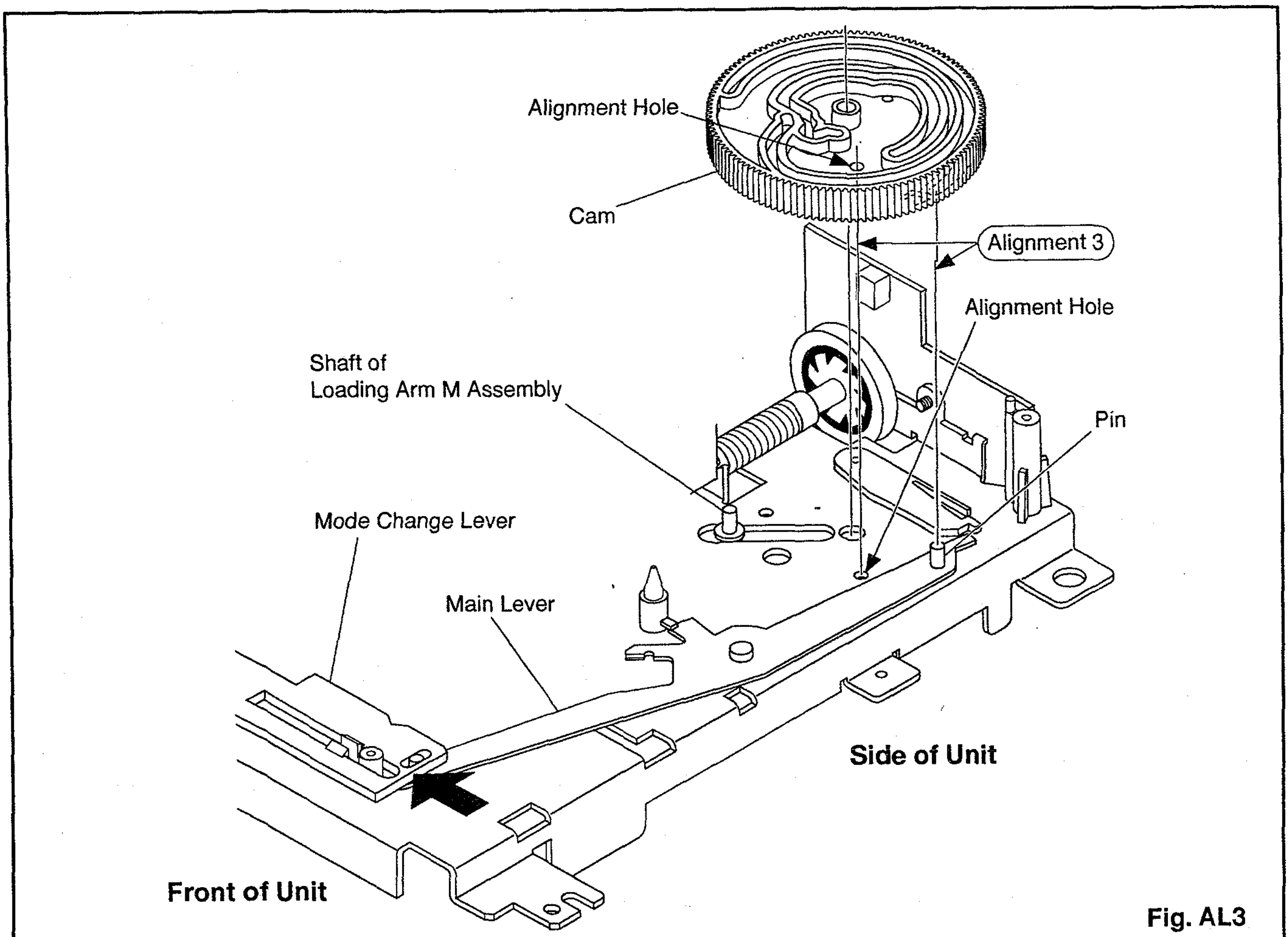

Alignment Hole
Cam
Alignment 3
Alignment Hole
Shaft of
Loading Arm M Assembly
Pin
Mode Change Lever
Main Lever
Side of Unit
Front of Unit

Fig. AL3

Alignment 3

Cam

1. Make sure that the mechanism is in Eject mode so that the shaft of Loading Arm M Assembly is in the position shown in Fig. AL3.
2. Align the alignment hole of Cam with the alignment hole of the base, holding Cam just above the base.
3. Carefully keeping these two holes aligned, install Cam while pushing Mode Change Lever in the direction of the arrow. Mode Change Lever must be pushed to make the pin on Main Lever fit in the proper groove in lower Cam.
4. After installing Cam, make sure that the alignment hole of Cam is still aligned with the base hole and that the pin on Main Lever is inserted into the proper groove of lower Cam as specified in Fig. AL3.

Alignment 4

Pinch Roller Arm Assembly

1. Ensure that the pin of Pinch Roller Arm Assembly is positioned in the end of the groove of upper Cam as shown in Fig. AL4.

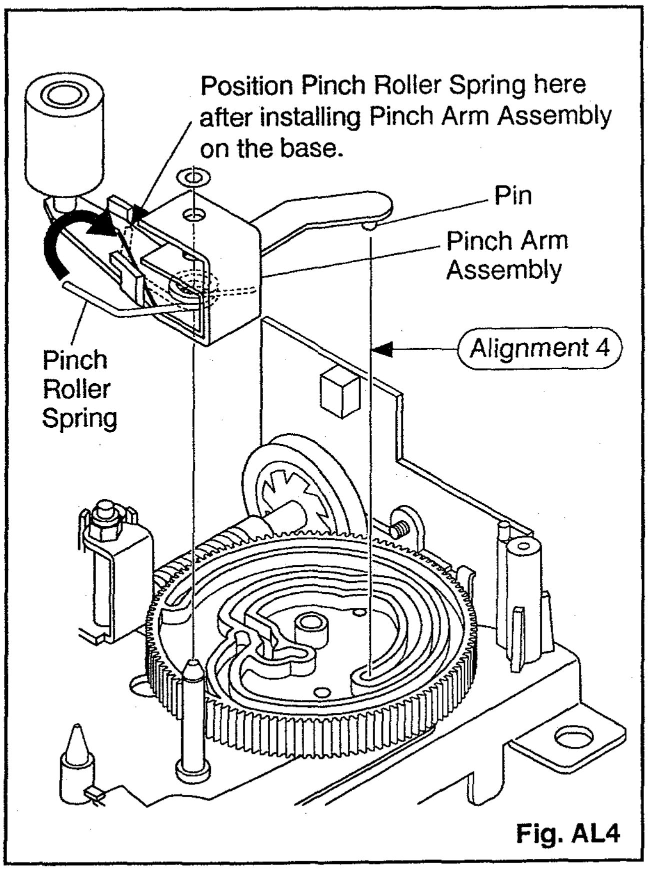

Position Pinch Roller Spring here after installing Pinch Arm Assembly on the base.
Pin
Pinch Arm Assembly
Alignment 4
Pinch Roller Spring

Fig. AL4

Alignment 5

Cassette Drive Lever Assembly

1. Ensure that the pin of Cassette Drive Lever Assembly is positioned in the groove of upper Cam as shown in Fig. AL5.

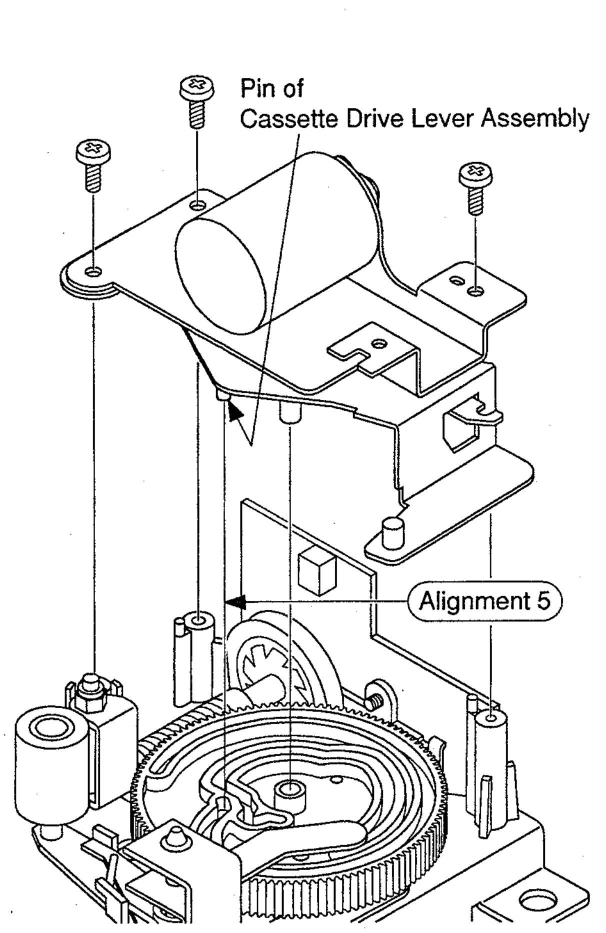

Pin of
Cassette Drive Lever Assembly
Alignment 5

Fig. AL5

Alignment S

This alignment can be performed independently of any other alignment.

Ground Brush Assembly

1. Check to see if Ground Brush Assembly is properly set in a position equal to or just less than 1mm (0.04 inch) (but never more than 1 mm or 0.04 inch), as measured from the center of the brush to the center of the Cylinder Shaft as shown in Fig. AL6.
2. If this measurement exceeds 1mm (0.04 inch), loosen and refasten the screw of Ground Brush Assembly. If this is not enough and further adjustment is necessary, loosen and refasten the three screws of Cylinder Assembly. These three screws are shown in Fig. DM18 in DISASSEMBLY/ASSEMBLY PROCEDURES OF DECK MECHANISM.

Note: DO NOT install Ground Brush Assembly in the opposite position (on the left side of the center of the Cylinder shaft), but always within a maximum of 1mm (0.04 inch) to the right side of the center of this shaft.

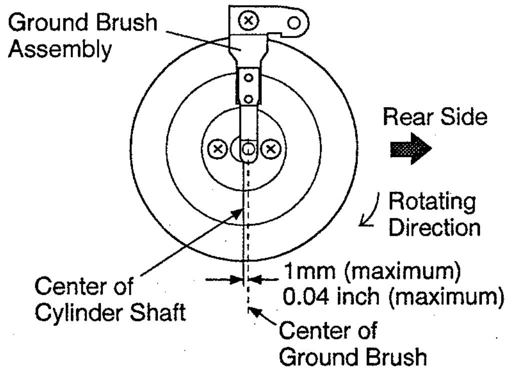

Ground Brush
Assembly
Rear Side
Rotating
Direction
Center of
Cylinder Shaft
1mm (maximum)
0.04 inch (maximum)
Center of
Ground Brush

Fig. AL6

SCHEMATIC DIAGRAMS AND CBA'S

Standard Notes

WARNING

Many electrical and mechanical parts in this chassis have special characteristics. These characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements; electrical components having such features are identified by the mark " ⚠ " in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

Capacitor Temperature Markings

Mark	Capacity change rate	Standard temperature	Temperature range
(B)	±10%	20°C	-25~+85°C
(F)	+30 -80%	20°C	-25~+85°C
(SR)	±15%	20°C	-25~+85°C
(Z)	+30 -80%	20°C	-10~+70°C

Note:

1. Do not use the part number shown on these drawings for ordering. The correct part number is shown in the parts list, and may be slightly different or amended since these drawings were prepared.
2. All resistance values are indicated in ohms (K=10^3, M=10^6).
3. Resistor wattages are 1/5W or 1/6W unless otherwise specified.
4. All capacitance values are indicated in µF (P=10^{-6}µF).
5. All voltages are DC voltages unless otherwise specified.
6. Electrical parts such as capacitors, connectors, diodes, IC's, transistors, resistors, switches, and fuses are identified by four digits. The first two digits are not shown for each component. In each block of the diagram, there is a note such as shown below to indicate these abbreviated two digits.

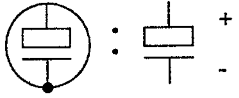
TUNER BLOCK SYMBOL NO. 70**

Example: "C08" in this "TUNER BLOCK" is C7008.

Capacitors and transistors are represented by the following symbols.

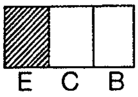
CBA Symbols

(Top View) (Bottom View)



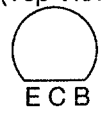
: Electrolytic Capacitor

(Bottom View)



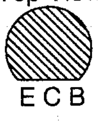
: Transistor or Digital Transistor

(Top View)



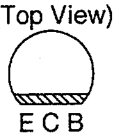
NPN Transistor

(Top View)



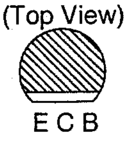
PNP Transistor

(Top View)



NPN Digital Transistor

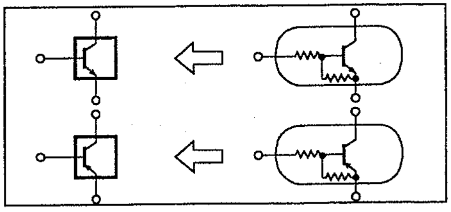
(Top View)



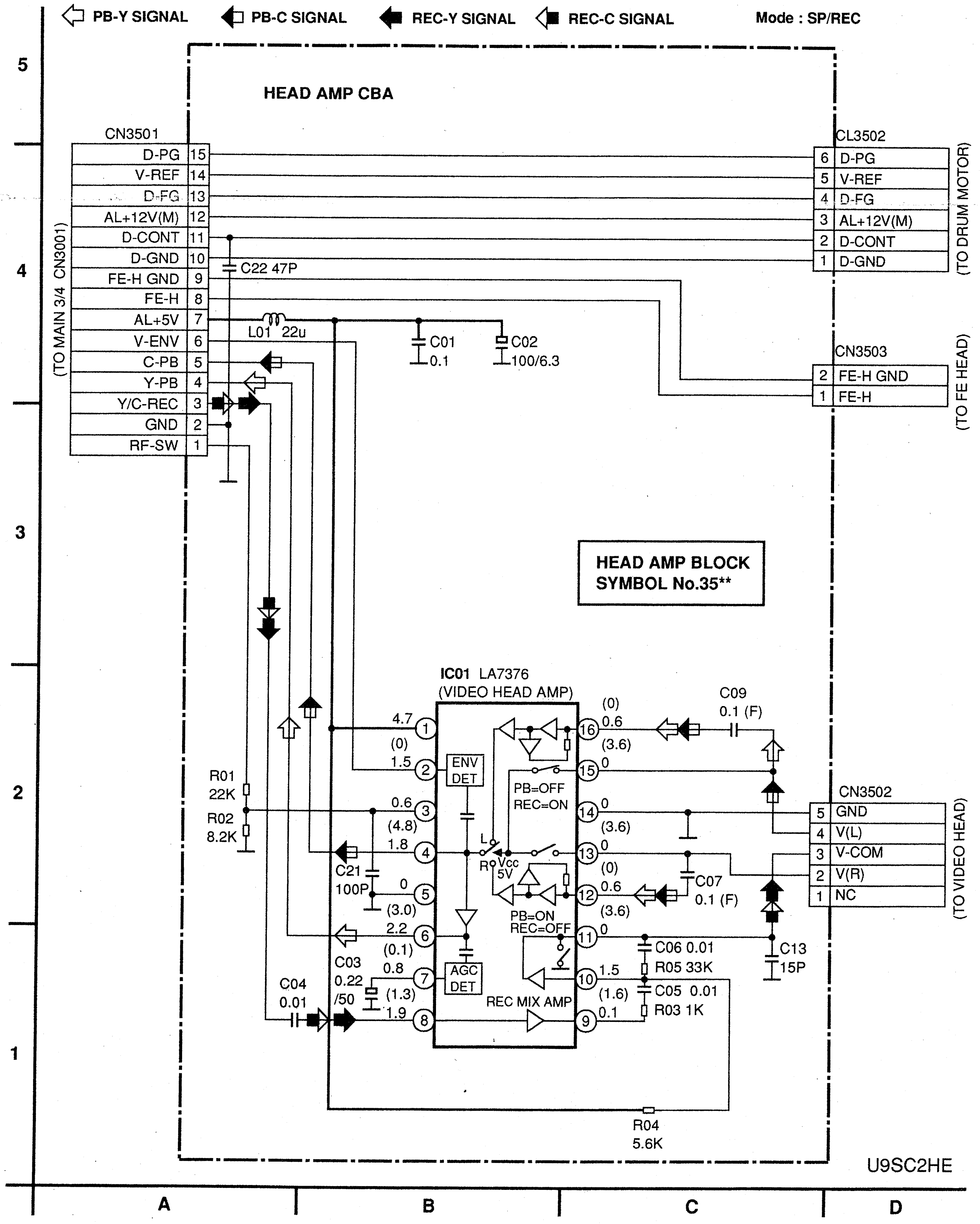
PNP Digital Transistor

Schematic Diagram Symbols

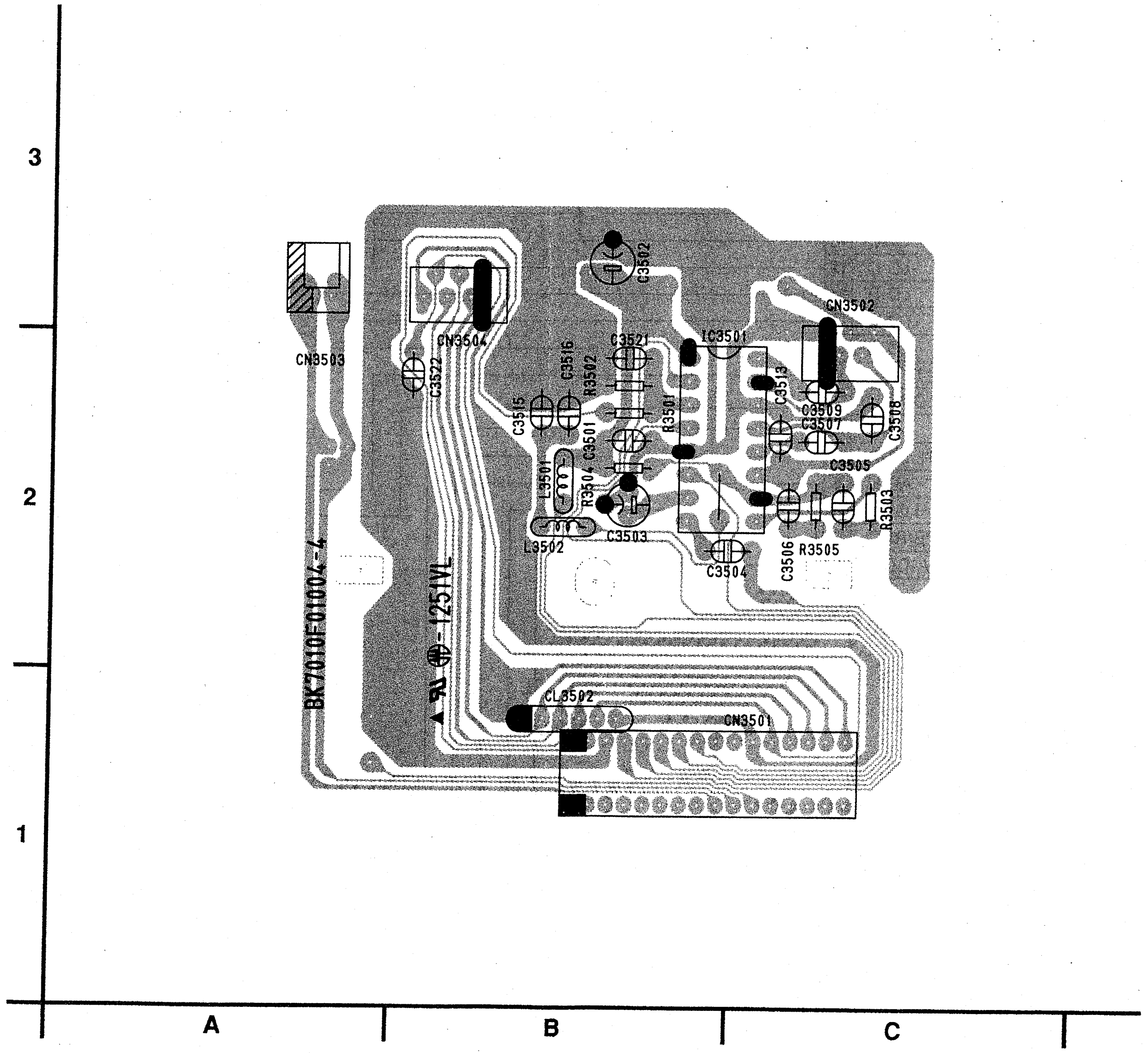
Digital Transistor



Head Amp Schematic Diagram


PB-Y SIGNAL
PB-C SIGNAL
REC-Y SIGNAL
REC-C SIGNAL
Mode : SP/REC
HEAD AMP CBA
CN3501
D-PG 15
V-REF 14
D-FG 13
AL+12V(M) 12
D-CONT 11
D-GND 10
FE-H GND 9
FE-H 8
AL+5V 7
V-ENV 6
C-PB 5
Y-PB 4
Y/C-REC 3
GND 2
RF-SW 1
(TO MAIN 3/4 CN3001)
C22 47P
L01 22u
C01 0.1
C02 100/6.3
CL3502
6 D-PG
5 V-REF
4 D-FG
3 AL+12V(M)
2 D-CONT
1 D-GND
(TO DRUM MOTOR)
CN3503
2 FE-H GND
1 FE-H
(TO FE HEAD)
HEAD AMP BLOCK
SYMBOL No.35**
IC01 LA7376
(VIDEO HEAD AMP)
ENV DET
AGC DET
PB=OFF
REC=ON
PB=ON
REC=OFF
REC MIX AMP
Vcc 5V
L
R
C09 0.1 (F)
C07 0.1 (F)
C06 0.01
R05 33K
C05 0.01
R03 1K
C13 15P
R01 22K
R02 8.2K
C21 100P
C03 0.22 /50
C04 0.01
R04 5.6K
CN3502
5 GND
4 V(L)
3 V-COM
2 V(R)
1 NC
(TO VIDEO HEAD)
4.7
(0)
1.5
0.6
(4.8)
1.8
0
(3.0)
2.2
(0.1)
0.8
(1.3)
1.9
(0)
0.6
(3.6)
0
0
(3.6)
0
(0)
0.6
(3.6)
0
1.5
(1.6)
0.1
U9SC2HE
5
4
3
2
1
A
B
C
D

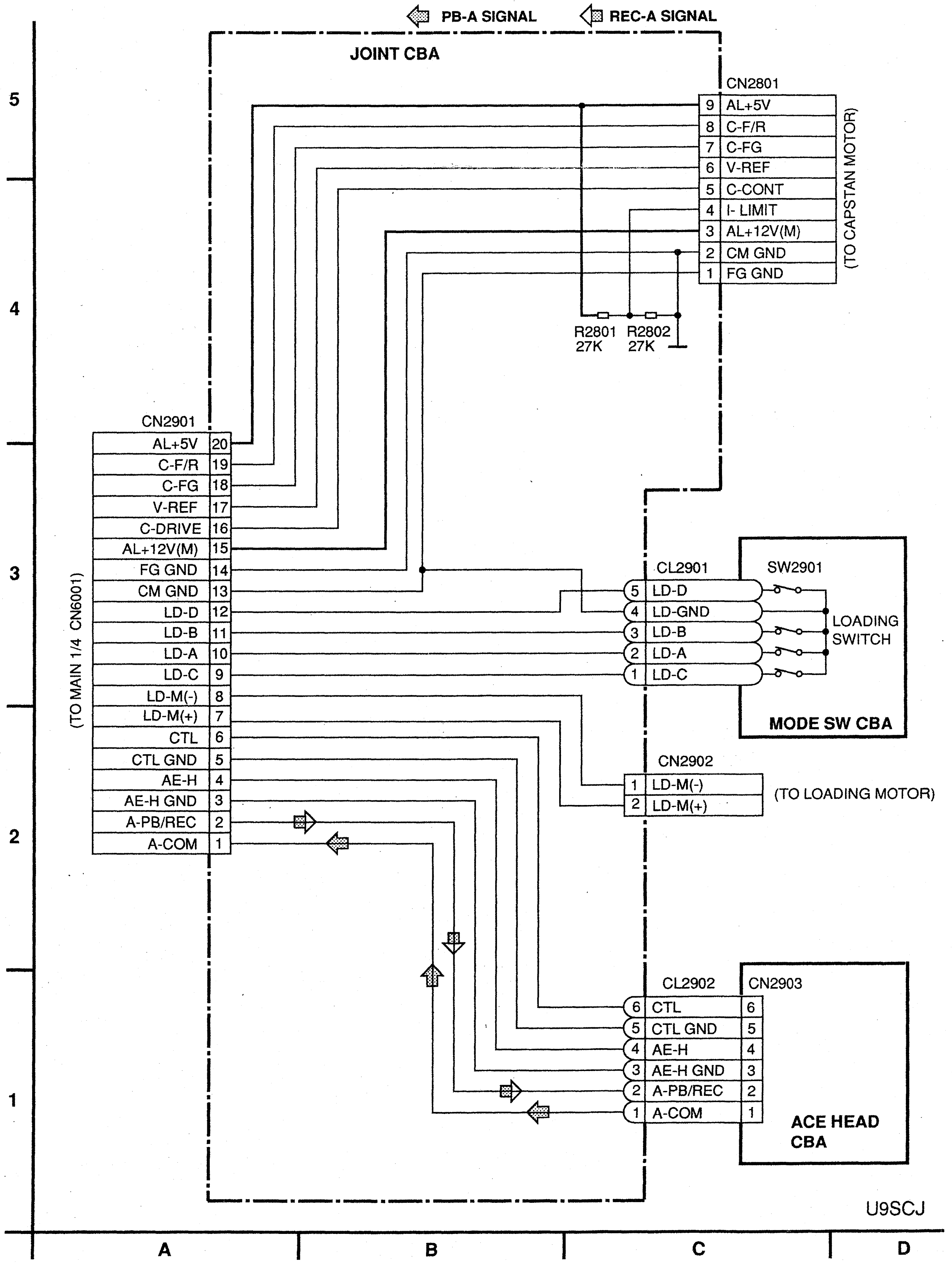
Head Amp CBA Top View


3
2
1
A
B
C
CN3503
CN3504
C3522
C3502
C3516
R3502
C3521
IC3501
CN3502
C3515
C3501
R3501
C3513
C3509
C3507
C3506
L3501
R3504
C3503
C3505
R3503
L3502
C3504
C3506
R3505
CL3502
CN3501
BK7010F01004-4
1251VL

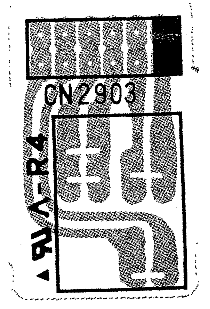
BK7010F01004-4

SCHEMATIC DIAGRAMS AND CBA'S

Joint/Mode SW/Ace Head Schematic Diagram

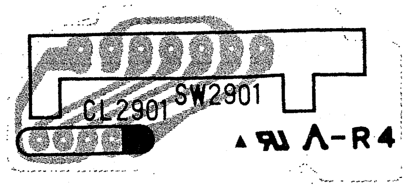

PB-A SIGNAL
REC-A SIGNAL
JOINT CBA
CN2801
9 AL+5V
8 C-F/R
7 C-FG
6 V-REF
5 C-CONT
4 I- LIMIT
3 AL+12V(M)
2 CM GND
1 FG GND
(TO CAPSTAN MOTOR)
R2801 27K
R2802 27K
CN2901
AL+5V 20
C-F/R 19
C-FG 18
V-REF 17
C-DRIVE 16
AL+12V(M) 15
FG GND 14
CM GND 13
LD-D 12
LD-B 11
LD-A 10
LD-C 9
LD-M(-) 8
LD-M(+) 7
CTL 6
CTL GND 5
AE-H 4
AE-H GND 3
A-PB/REC 2
A-COM 1
(TO MAIN 1/4 CN6001)
CL2901
5 LD-D
4 LD-GND
3 LD-B
2 LD-A
1 LD-C
SW2901
LOADING SWITCH
MODE SW CBA
CN2902
1 LD-M(-)
2 LD-M(+)
(TO LOADING MOTOR)
CL2902
6 CTL
5 CTL GND
4 AE-H
3 AE-H GND
2 A-PB/REC
1 A-COM
CN2903
6
5
4
3
2
1
ACE HEAD CBA
U9SCJ
5
4
3
2
1
A
B
C
D

ACE HEAD (Top View)


CN2903
▲ ℜ Λ-R4

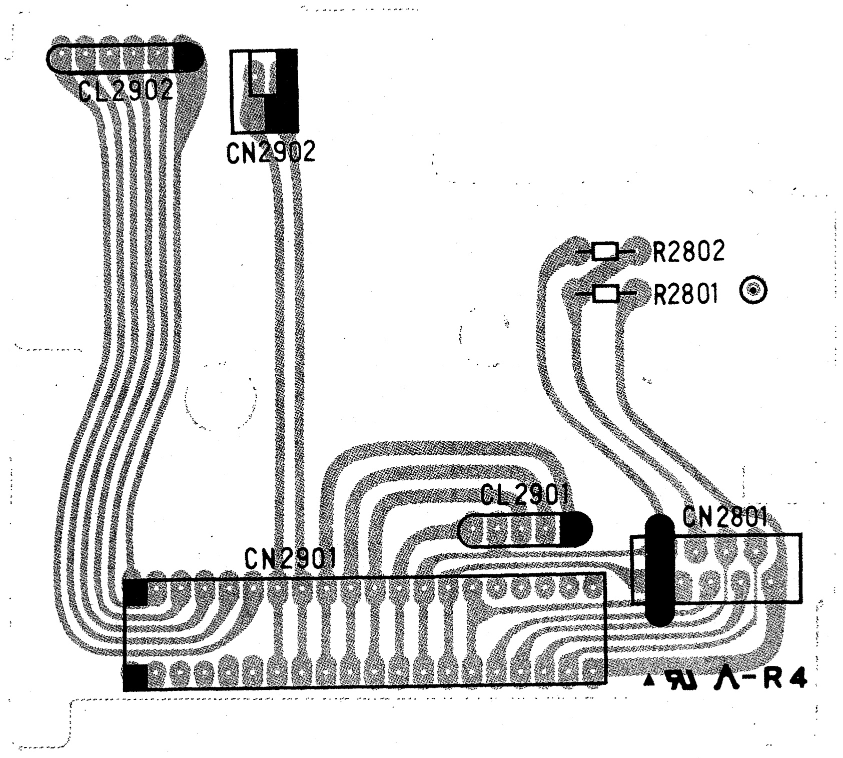
BK7010F01002-C

MODE SW (Top View)


CL2901
SW2901
▲ ℜ Λ-R4

BK7010F01002-B

JOINT (Top View)


CL2902
CN2902
R2802
R2801
CL2901
CN2901
CN2801
▲ ℜ Λ-R4

BK7010F01002-A

EXPLODED VIEWS AND PARTS LIST SECTION

VIDEO RECORDER

9A-009 / 9A-029

Sec. 3: Exploded views and Parts List Section

- ● Exploded views
- ● Parts List

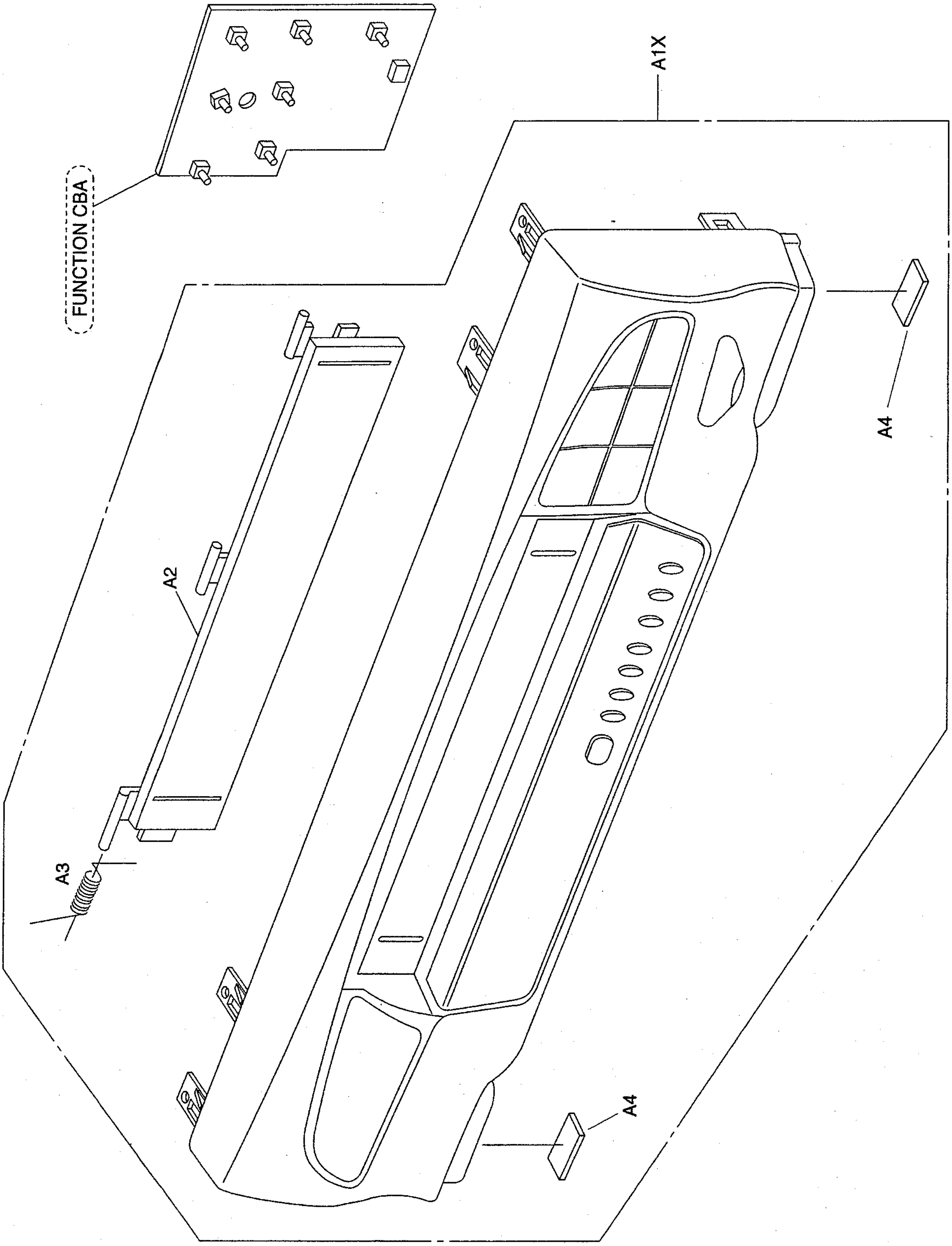
TABLE OF CONTENTS

Exploded Views 3-1-1
Mechanical Parts List 3-2-1
Electrical Parts List 3-3-1
Deck Mechanical Parts List 3-4-1
Deck Electrical Parts List 3-5-1

EXPLODED VIEWS

Front Panel

See the Electrical Parts List for the parts with this mark.



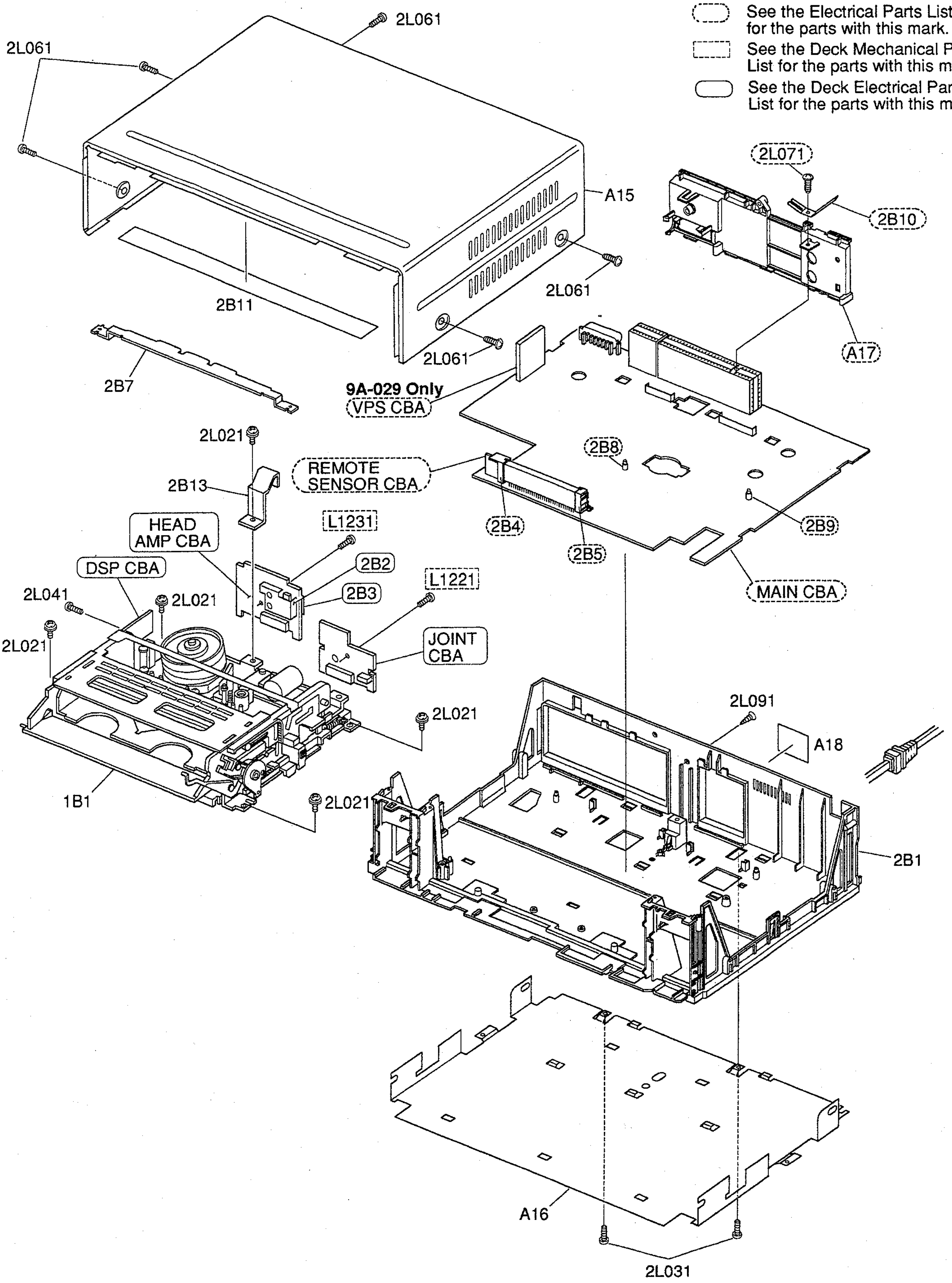
A1X
FUNCTION CBA
A2
A3
A4
A4

Cabinet

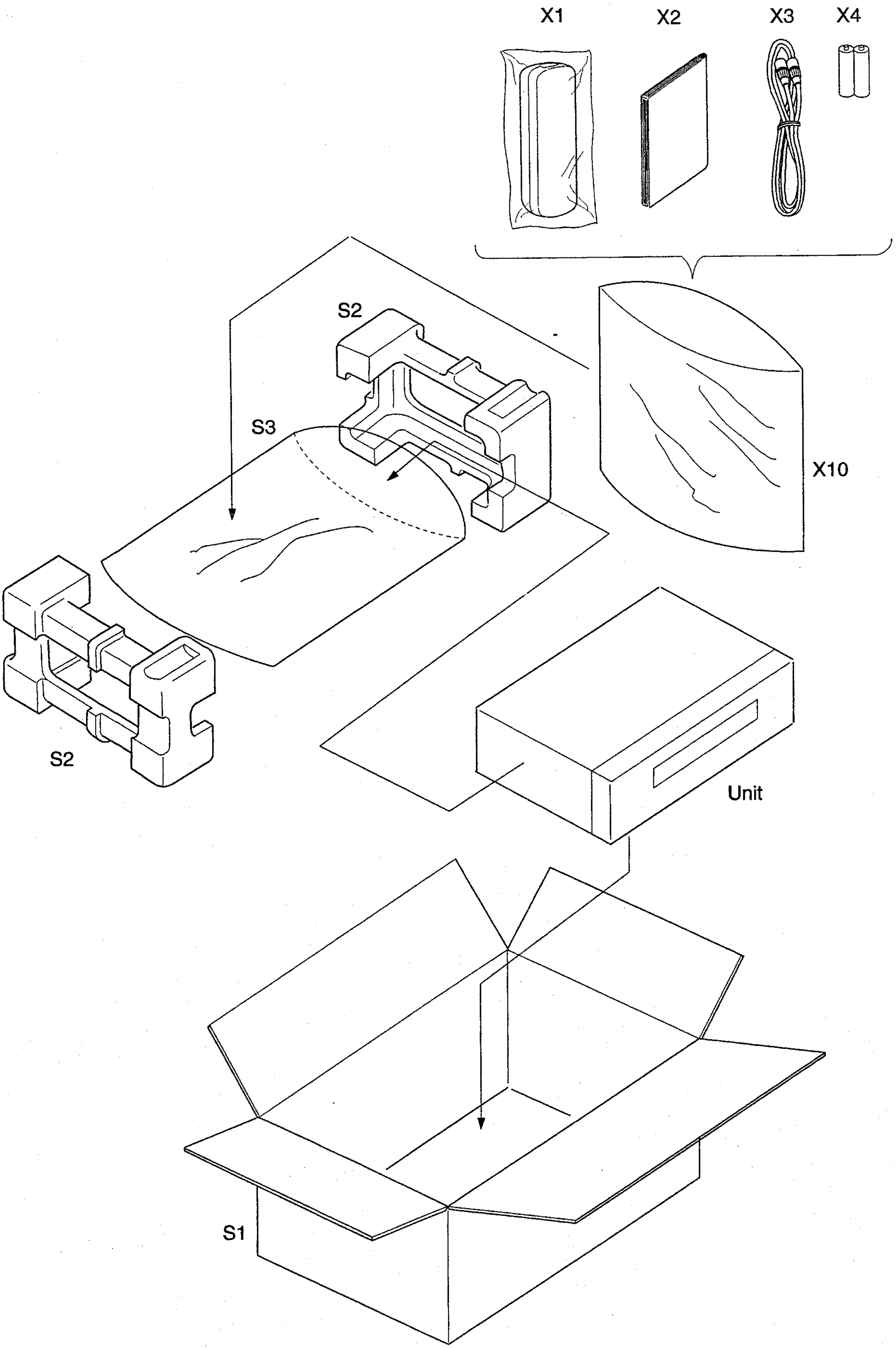
⬭ See the Electrical Parts List for the parts with this mark.

⬚ See the Deck Mechanical Parts List for the parts with this mark.

▭ See the Deck Electrical Parts List for the parts with this mark.


2L061
2L061
A15
2L061
2B11
2L061
2L071
2B10
A17
2B7
9A-029 Only
VPS CBA
2L021
REMOTE SENSOR CBA
2B8
2B13
HEAD AMP CBA
L1231
2B4
2B5
2B9
DSP CBA
2B2
2B3
L1221
MAIN CBA
2L041
2L021
2L021
JOINT CBA
2L021
2L091
A18
1B1
2L021
2B1
A16
2L031

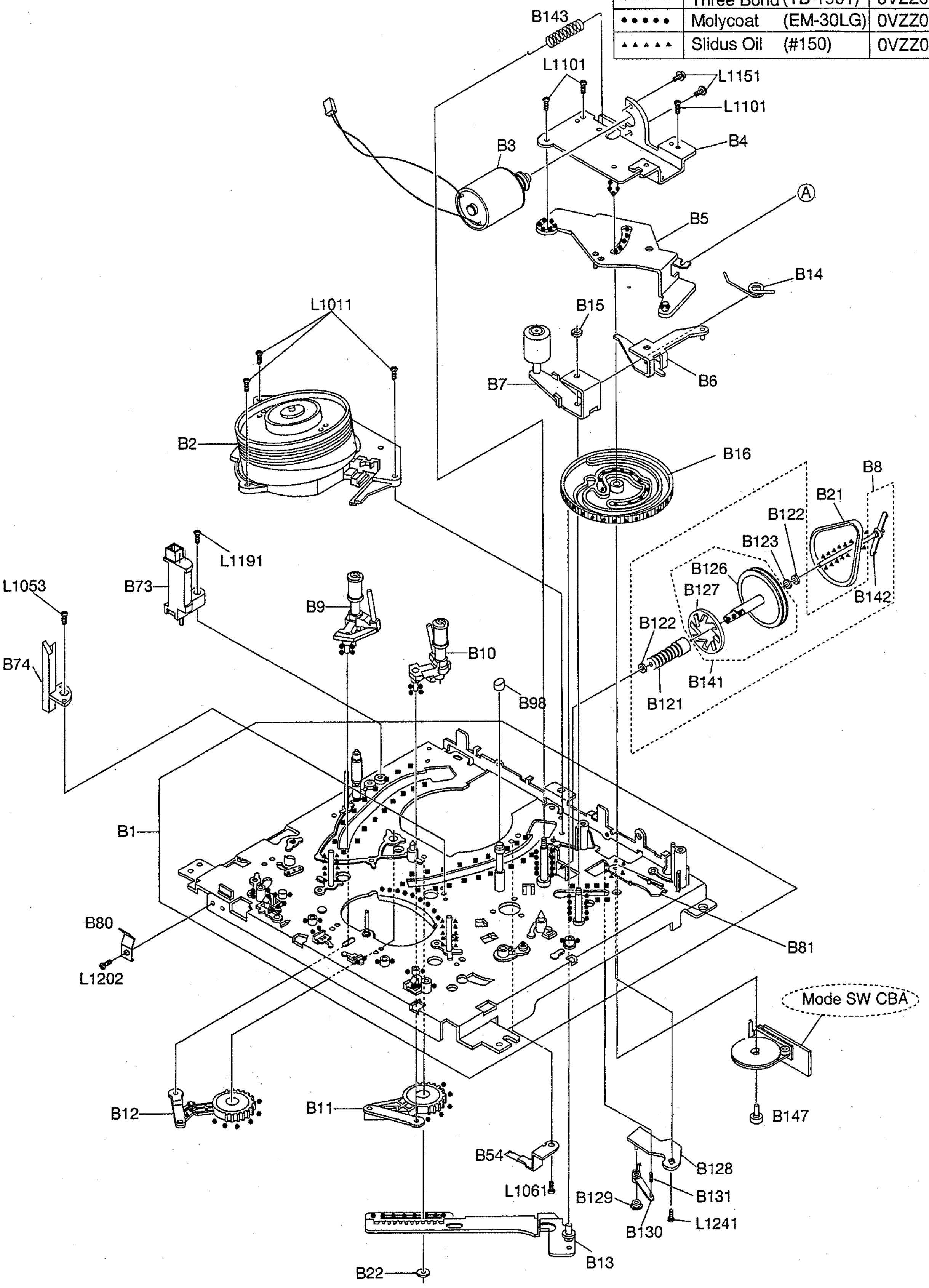
Packing


X1
X2
X3
X4
S2
S3
X10
S2
Unit
S1

DECK EXPLODED VIEWS

View 1

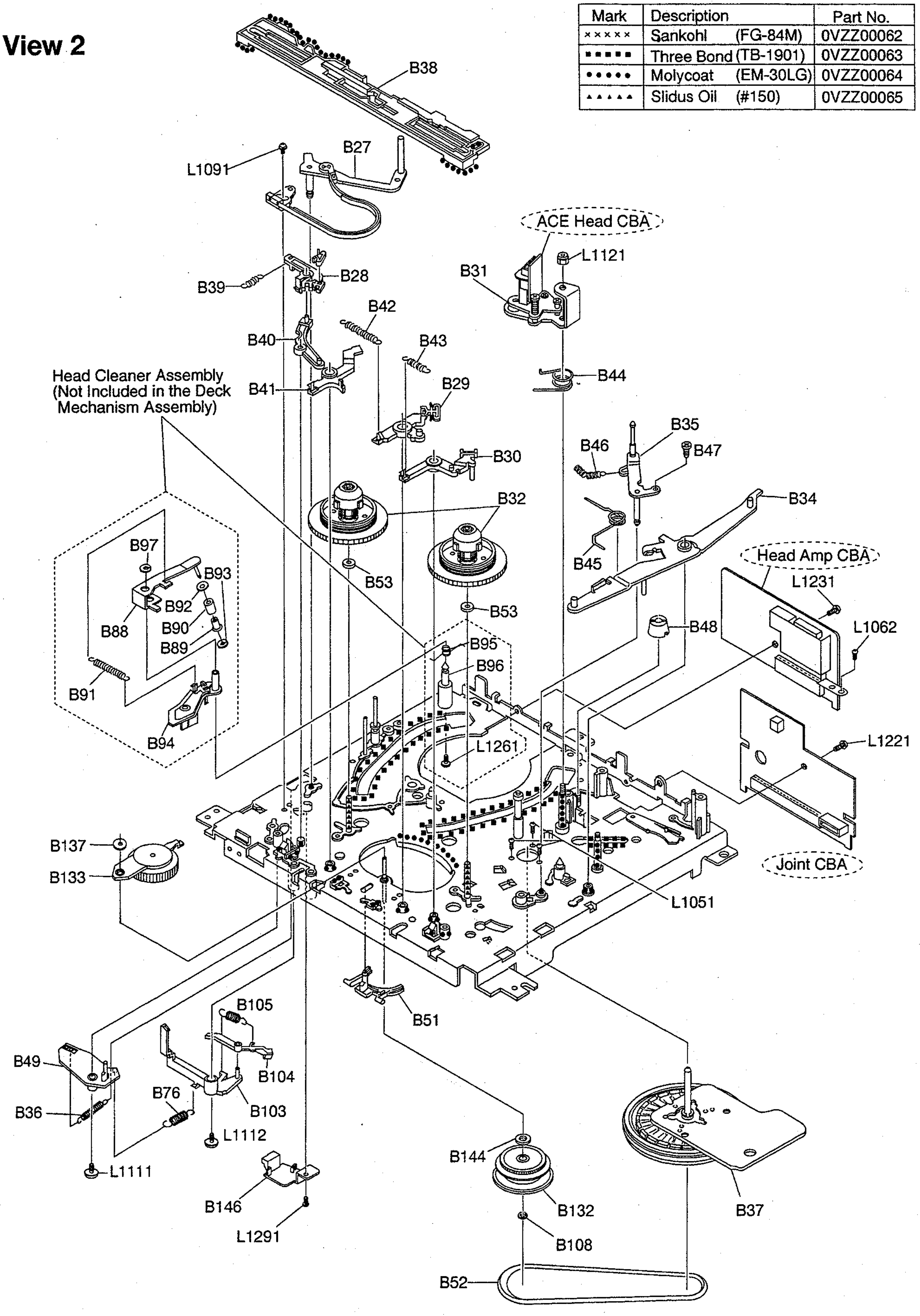
Mark	Description	Part No.
×××××	Sankohl (FG-84M)	0VZZ00062
■■■■■	Three Bond (TB-1901)	0VZZ00063
●●●●●	Molycoat (EM-30LG)	0VZZ00064
▲▲▲▲▲	Slidus Oil (#150)	0VZZ00065


B143
L1101
L1151
L1101
B4
B3
Ⓐ
B5
B14
L1011
B15
B7
B6
B2
B16
B8
B21
B122
B123
L1191
B126
B127
B142
L1053
B73
B9
B122
B10
B74
B98
B141
B121
B1
B80
B81
L1202
Mode SW CBA
B12
B11
B147
B54
B128
L1061
B129
B131
B130
L1241
B13
B22

See the Deck Electrical Parts List.

View 2

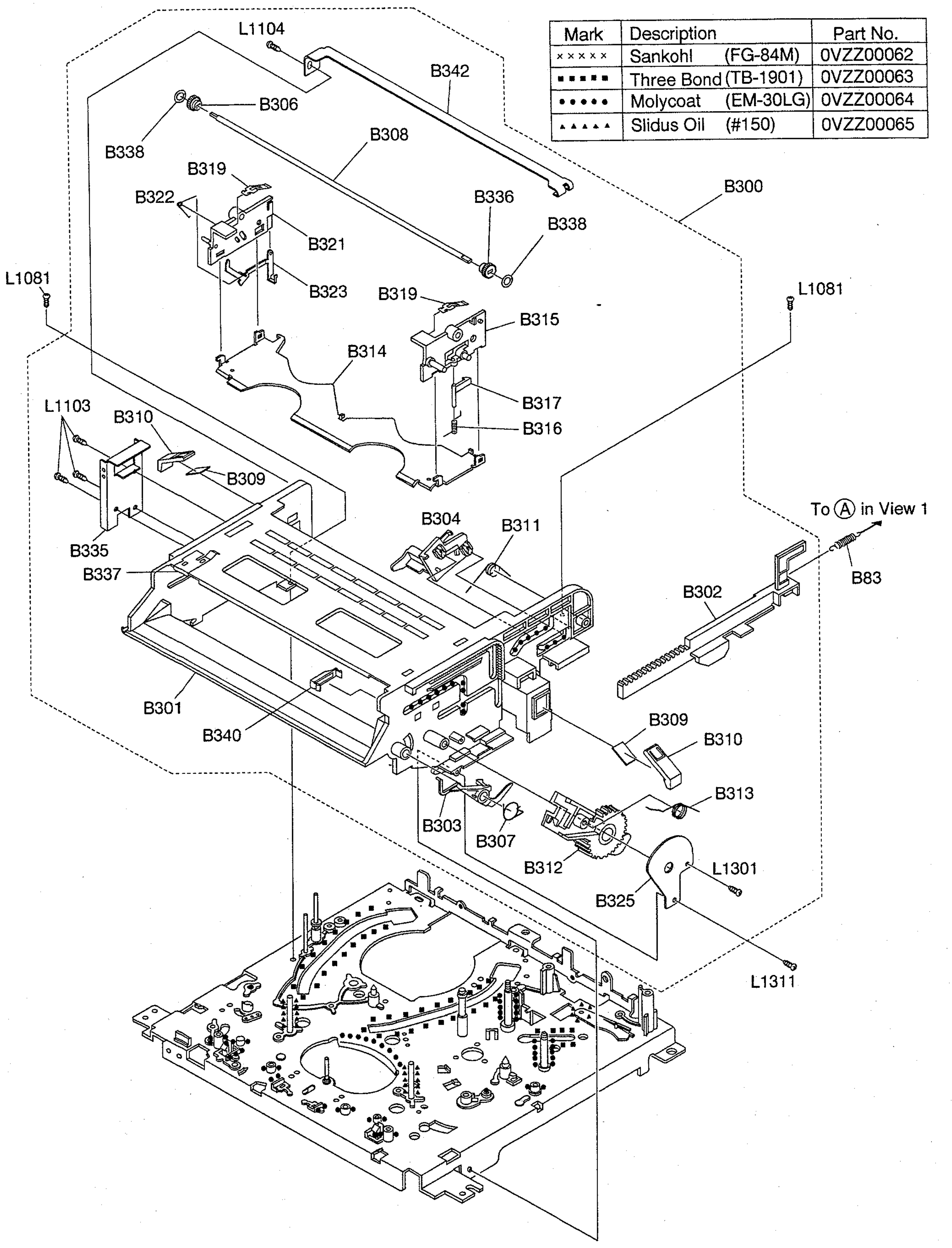
Mark	Description	Part No.
×××××	Sankohl (FG-84M)	0VZZ00062
■■■■■	Three Bond (TB-1901)	0VZZ00063
●●●●●	Molycoat (EM-30LG)	0VZZ00064
▲▲▲▲▲	Slidus Oil (#150)	0VZZ00065


B38
L1091
B27
ACE Head CBA
L1121
B31
B39
B28
B42
B40
B43
Head Cleaner Assembly (Not Included in the Deck Mechanism Assembly)
B41
B29
B44
B35
B46
B47
B30
B32
B34
B97
B93
B45
Head Amp CBA
B53
L1231
B92
B53
B88
B90
B89
B48
L1062
B95
B96
B91
L1261
B94
L1221
B137
B133
Joint CBA
L1051
B51
B105
B49
B104
B76
B103
B36
L1112
L1111
B144
B146
B132
B37
L1291
B108
B52

See the Deck Electrical Parts List.

View 3

Mark	Description	Part No.
×××××	Sankohl (FG-84M)	0VZZ00062
■■■■■	Three Bond (TB-1901)	0VZZ00063
●●●●●	Molycoat (EM-30LG)	0VZZ00064
▲▲▲▲▲	Slidus Oil (#150)	0VZZ00065


L1104
B342
B306
B338
B308
B319
B322
B321
B336
B338
B300
L1081
B323
B319
B315
L1081
B314
L1103
B310
B317
B316
B309
B304
B311
To Ⓐ in View 1
B335
B337
B83
B302
B301
B309
B340
B310
B313
B303
B307
B312
L1301
B325
L1311

MECHANICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

Ref. No.	Description	Part No.
A1X	FRONT ASSEMBLY (9A-009 MODEL)	0VM201574A
A1X	FRONT ASSEMBLY (9A-029 MODEL)	0VM201575A
A 2	DOOR, CASSETTE	0VM405869A
A 3	SPRING, DOOR	0VM403265
A 4	FOOT	0VM403657
A 15	CASE, TOP	0VM201355
A 16	PANEL, BOTTOM (FTZRESET) K4390BA	0VM201357
A 18 ⚠	LABEL, RATING (9A-009 MODEL)	0VM405928
A 18 ⚠	LABEL, RATING (9A-029 MODEL)	0VM405931
1B 1	DECK ASSEMBLY	N3103XK
2B 1	VIDEO TRAY	0VM000047
2B 7	HOLDER, DECK	0VM302182A
2B 13	DECK SUPPORTER	0VM404958
2L 021	SCREW, P-TIGHT 3X10 WASHER HEAD+	GCMP3100
2L 031	SCREW, P-TIGHT 3X10 BIND HEAD	GBMP3100
2L 041	SCREW, P-TIGHT 3X10 WASHER HEAD+	GCMP3100
2L 061	SCREW, P-TIGHT 4X12 BIND HEAD+	GBKP4120
2L 091	SCREW, A-TIGHT M3X8 BIND HEAD+	DBK13080
	PACKING	
S 1	GIFT BOX CARTON (9A-009 MODEL)	0VM405927
S 1	GIFT BOX CARTON (9A-029 MODEL)	0VM405930
S 2	STYROFOAM	0VM201336
S 3	ACCESSORY BAG 470X560X0.05T	Z547560
	ACCESSORY KIT	
X 1	REMOCON BOX RRS2000-5502CR	UREMT36SR023
X 2 ⚠	OWNER'S MANUAL (9A-009 MODEL)	0VMN01431
X 2 ⚠	OWNER'S MANUAL (9A-029 MODEL)	0VMN01432
X 3	RF CORD PAL 1.2M	WPZ0122LG001
X 4	DRY BATTERY UM-3(M) 2PCS PACK or	1790849
X 4	DRY BATTERY UM3/RS6 2PCS PACK	579W099
X 10	ACCESSORY BAG	0VM404632

ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that not assigned part numbers (----------) are not available.

Tolerance of Capacitors and Resistors are noted with the following symbols.

C..........±0.25% D..........±0.5% F.........±1%
G..........±2% J..........±5% K..........±10%
M..........±20% N..........±30% Z..........+80/-20%

MCV CBA

Ref. No.	Description	Part No.
	MCV CBA Consists of the following:	**0VSA06603**
	Main (MCV-A) CBA	----------
	Function (MCV-B) CBA	----------
	Remote Sensor (MCV-C) CBA	----------
	Remote Sensor (MCV-D) CBA	----------

Main (MCV-A) CBA

Ref. No.	Description	Part No.
	Main (MCV-A) CBA Consists of the following:	----------
	CAPACITORS	
C 1001 ⚠	METALLIZED FILM CAP. 0.047µF/250V K	CT2E473NC011
C 1001	METALLIZED FILM CAP. 0.047µF/250V M or	CT2E473MS001
	METALLIZED FILM CAP. 0.047µF/250V M or	CT2E473UN009
	METALLIZED FILM CAP. 0.047µF/275V K	CT2E473DT001
C 1002 ⚠	METALLIZED FILM CAP. 0.047µF/250V K	CT2E473NC011
C 1002	METALLIZED FILM CAP. 0.047µF/250V M or	CT2E473MS001
	METALLIZED FILM CAP. 0.047µF/250V M or	CT2E473UN009
	METALLIZED FILM CAP. 0.047µF/275V K	CT2E473DT001
C 1003 ⚠	SAFTY CAP. 2200pH/400V M	122Z011
C 1004	ELECTROLYTIC CAP. 22µF/400V M or	CA2H220NC010
	ELECTROLYTIC CAP. 22µF/400V M	CA2H220SP027
C 1005	CERAMIC CAP. B K 0.01µF/500V or	CCD2JKP0B103
	CERAMIC CAP. 0.01µF/500V or	CA2J103TU001
	CERAMIC CAP. B K 0.01µF/500V	CCD2JKD0B103
C 1006	CERAMIC CAP. SL J 56pH/1KV or	CA3A560MR506
	CERAMIC CAP. SL K 56pH/1KV	CCD3AKPSL560
C 1007	SEMICONDUCTOR CAP. SR K 0.027µF/25V or	CDA1EKS0X273
	SEMICONDUCTOR CAP. SR K 0.027µF/25V	12Y2273S
C 1008	CERAMIC CAP. X K 0.0033µF/16V	3X4C332T
C 1009	CERAMIC CAP. Y M 8200pH/16V	3Y4D822T
C 1010	SEMICONDUCTOR CAP. SR K 0.022µF/25V or	CDA1EKS0X223
	SEMICONDUCTOR CAP. SR K 0.022µF/25V	12Y2223S
C 1011	ELECTROLYTIC CAP. 4.7µF/50V M or	CE1JMASDL4R7
	ELECTROLYTIC CAP. 4.7µF/50V M	126F475S
C 1012	ELECTROLYTIC CAP. 470µF/16V M or	CE1CMAUDL471
	ELECTROLYTIC CAP. 470µF/16V M	126C477S
C 1013	ELECTROLYTIC CAP. 22µF/50V M or	CE1JMASDL220
	ELECTROLYTIC CAP. 22µF/50V M	126F226S
C 1014	ELECTROLYTIC CAP. 330µF/16V M or	CE1CMASDL331
	ELECTROLYTIC CAP. 330µF/16V M	126C337S
C 1015	ELECTROLYTIC CAP. 330µF/16V M or	CE1CMASDL331
	ELECTROLYTIC CAP. 330µF/16V M	126C337S
C 1016	ELECTROLYTIC CAP. 1000µF/10V M or	CE1AMAUDL102
	ELECTROLYTIC CAP. 1000µF/10V M	126B108S
C 1017	ELECTROLYTIC CAP. 100µF/10V M or	CE1AMASDL101
	ELECTROLYTIC CAP. 100µF/10V M	126B107S
C 1018	CERAMIC CAP. F Z 0.01µF/50V or	CCD1JZS0F103
	CERAMIC CAP. F Z 0.01µF/50V	12F3103S
C 1019	SEMICONDUCTOR CAP. SR K 0.047µF/25V or	CDA1EKS0X473
	SEMICONDUCTOR CAP. SR K 0.047µF/25V	12Y2473S
C 1021	CERAMIC CAP. B J 150pH/50V	3B41151T
C 1501	ELECTROLYTIC CAP. 0.47µF/50V M H7 or	CE1JMASSLR47
	ELECTROLYTIC CAP. 0.47µF/50V M H7	526W474S
C 1502	ELECTROLYTIC CAP. 10µF/16V M	CE1CMASDL100
C 1503	CERAMIC CAP. B K 470pH/50V or	CCD1JKS0B471
	CERAMIC CAP. B K 470pH/50V	12B3471S
C 1504	ELECTRIC DOUBLE LAYER CAP. 0.022F/5.5V Z	CA0J223NE003
C 1505	CERAMIC CAP. SL J 47pH/50V	3S41470T
C 3001	CERAMIC CAP. SL J 39pH/50V	3S41390T
C 3002	ELECTROLYTIC CAP. 0.1µF/50V M H7 or	CE1JMASSL0R1
	ELECTROLYTIC CAP. 0.1µF/50V M H7	526W104S
C 3003	CERAMIC CAP. B J 150pH/50V	3B41151T
C 3004	CERAMIC CAP. SL J 68pH/50V	3S41680T
C 3005	CERAMIC CAP. F Z 0.01µF/25V or	CDA1EZT0F103
	CERAMIC CAP. F Z 0.01µF/16V	1220842T
C 3006	ELECTROLYTIC CAP. 0.1µF/50V M H7 or	CE1JMASSL0R1
	ELECTROLYTIC CAP. 0.1µF/50V M H7	526W104S
C 3007	CERAMIC CAP. F Z 0.022µF/25V or	122Z122T
	CERAMIC CAP. F Z 0.022µF/25V	1220843T
C 3009	CERAMIC CAP. SL J 33pH/50V	3S41330T
C 3011	CERAMIC CAP. SL J 33pH/50V	3S41330T
C 3012	CERAMIC CAP. SL J 27pH/50V	3S41270T
C 3013	CERAMIC CAP. SL J 27pH/50V	3S41270T
C 3014	CERAMIC CAP. Y M 0.01µF/16V or	CDA1CMT0Y103
	CERAMIC CAP. Y M 0.01µF/16V	3Y4D103T
C 3015	CERAMIC CAP. B J 220pH/50V	3B41221T
C 3016	CERAMIC CAP. SL J 56pH/50V	3S41560T
C 3017	CERAMIC CAP. B J 220pH/50V	3B41221T
C 3018	CERAMIC CAP. SL J 33pH/50V	3S41330T
C 3019	CERAMIC CAP. SL J 18pH/50V	3S41180T
C 3020	CERAMIC CAP. B J 180pH/50V	3B41181T
C 3021	CERAMIC CAP. SL J 22pH/50V	3S41220T
C 3022	CERAMIC CAP. SL J 47pH/50V	3S41470T
C 3023	CERAMIC CAP. SL J 82pH/50V or	CCD1JJSSL820
	CERAMIC CAP. SL J 82pH/50V	1270820S
C 3024	CERAMIC CAP. SL J 22pH/50V	3S41220T
C 3025	ELECTROLYTIC CAP. 1µF/50V M H7 or	CE1JMASSL010
	ELECTROLYTIC CAP. 1µF/50V M H7	526W105S
C 3026	CERAMIC CAP. B J 390pH/50V	3B41391T
C 3027	CERAMIC CAP. SL J 18pH/50V or	CCD1JJSSL180
	CERAMIC CAP. SL J 18pH/50V	1270180S
C 3028	CERAMIC CAP. B J 100pH/50V	3B41101T
C 3029	ELECTROLYTIC CAP. 10µF/16V M H7 or	CE1CMASSL100
	ELECTROLYTIC CAP. 10µF/16V M H7	526T106S
C 3030	ELECTROLYTIC CAP. 10µF/16V M H7 or	CE1CMASSL100
	ELECTROLYTIC CAP. 10µF/16V M H7	526T106S
C 3031	CERAMIC CAP. SL J 15pH/50V or	CCD1JJSSL150
	CERAMIC CAP. SL J 15pH/50V	1270150S

Ref. No.	Description	Part No.
C 3032	CERAMIC CAP. F Z 0.01µF/25V or	CDA1EZT0F103
	CERAMIC CAP. F Z 0.01µF/16V	1220842T
C 3033	CERAMIC CAP. F Z 0.022µF/25V or	122Z122T
	CERAMIC CAP. F Z 0.022µF/25V	1220843T
C 3034	CERAMIC CAP. F Z 0.022µF/25V or	122Z122T
	CERAMIC CAP. F Z 0.022µF/25V	1220843T
C 3035	ELECTROLYTIC CAP. 1µF/50V M H7 or	CE1JMASSL010
	ELECTROLYTIC CAP. 1µF/50V M H7	526W105S
C 3036	ELECTROLYTIC CAP. 1µF/50V M H7 or	CE1JMASSL010
	ELECTROLYTIC CAP. 1µF/50V M H7	526W105S
C 3037	CERAMIC CAP. F Z 0.01µF/25V or	CDA1EZT0F103
	CERAMIC CAP. F Z 0.01µF/16V	1220842T
C 3038	ELECTROLYTIC CAP. 10µF/16V M H7 or	CE1CMASSL100
	ELECTROLYTIC CAP. 10µF/16V M H7	526T106S
C 3039	ELECTROLYTIC CAP. 4.7µF/50V M H7 or	CE1JMASSL4R7
	ELECTROLYTIC CAP. 4.7µF/50V M H7	526W475S
C 3040	ELECTROLYTIC CAP. 4.7µF/25V M H7 or	CE1EMASSL4R7
	ELECTROLYTIC CAP. 4.7µF/25V M H7	526U475S
C 3043	ELECTROLYTIC CAP. 220µF/6.3V M H7 or	CE0KMASSL221
	ELECTROLYTIC CAP. 220µF/6.3V M H7	526R227S
C 3044	CERAMIC CAP. F Z 0.1µF/50V	3F40104T
C 3045	CERAMIC CAP. F Z 0.1µF/50V	3F40104T
C 3046	SEMICONDUCTOR CAP. SR K 0.022µF/25V or	CDA1EKS0X223
	SEMICONDUCTOR CAP. SR K 0.022µF/25V	12Y2223S
C 3047	ELECTROLYTIC CAP. 4.7µF/50V M H7 or	CE1JMASSL4R7
	ELECTROLYTIC CAP. 4.7µF/50V M H7	526W475S
C 3048	ELECTROLYTIC CAP. 1µF/50V M H7 or	CE1JMASSL010
	ELECTROLYTIC CAP. 1µF/50V M H7	526W105S
C 3049	CERAMIC CAP. F Z 0.01µF/25V or	CDA1EZT0F103
	CERAMIC CAP. F Z 0.01µF/16V	1220842T
C 3050	CERAMIC CAP. F Z 0.01µF/25V or	CDA1EZT0F103
	CERAMIC CAP. F Z 0.01µF/16V	1220842T
C 3051	ELECTROLYTIC CAP. 1µF/50V M H7 or	CE1JMASSL010
	ELECTROLYTIC CAP. 1µF/50V M H7	526W105S
C 3052	CERAMIC CAP. F Z 0.01µF/50V or	CCD1JZS0F103
	CERAMIC CAP. F Z 0.01µF/50V	12F3103S
C 3053	CERAMIC CAP. F Z 0.01µF/50V or	CCD1JZS0F103
	CERAMIC CAP. F Z 0.01µF/50V	12F3103S
C 3054	SEMICONDUCTOR CAP. F Z 0.1µF/25V or	CDA1EZS0F104
	SEMICONDUCTOR CAP. F Z 0.1µF/25V	1220520S
C 3055	CERAMIC CAP. F Z 0.022µF/25V or	122Z122T
	CERAMIC CAP. F Z 0.022µF/25V	1220843T
C 3056	ELECTROLYTIC CAP. 22µF/6.3V M H7 or	CE0KMASSL220
	ELECTROLYTIC CAP. 22µF/6.3V M H7	526R226S
C 3057	ELECTROLYTIC CAP. 1µF/50V M H7 or	CE1JMASSL010
	ELECTROLYTIC CAP. 1µF/50V M H7	526W105S
C 3058	CERAMIC CAP. SL J 15pH/50V or	CCD1JJSSL150
	CERAMIC CAP. SL J 15pH/50V	1270150S
C 3059	CERAMIC CAP. F Z 0.01µF/25V or	CDA1EZT0F103
	CERAMIC CAP. F Z 0.01µF/16V	1220842T
C 3062	ELECTROLYTIC CAP. 0.1µF/50V M or	CE1JMASDL0R1
	ELECTROLYTIC CAP. 0.1µF/50V M	126F104S
C 3063	CERAMIC CAP. B J 220pH/50V	3B41221T
C 3064	CERAMIC CAP. F Z 0.047µF/50V	3F40473T
C 3069	CERAMIC CAP. B J 0.001µF/50V	3B41102T
C 3070	CERAMIC CAP. F Z 0.022µF/25V or	122Z122T
	CERAMIC CAP. F Z 0.022µF/25V	1220843T
C 3090	ELECTROLYTIC CAP. 470µF/6.3V M or	CE0KMASDL471
	ELECTROLYTIC CAP. 470µF/6.3V M	126A477S
C 3091	ELECTROLYTIC CAP. 100µF/16V M or	CE1CMASDL101
	ELECTROLYTIC CAP. 100µF/16V M	126C107S
C 4001	CERAMIC CAP. B K 1000pH/50V or	CCD1JKS0B102
	CERAMIC CAP. B K 0.001µF/50V	12B3102S
C 4002	CERAMIC CAP. X K 0.0018µF/16V	3X4C182T
C 4003	SEMICONDUCTOR CAP. SR K 0.01µF/25V or	CDA1EKS0X103
	SEMICONDUCTOR CAP. SR K 0.01µF/25V	12Y2103S

Ref. No.	Description	Part No.
C 4004	ELECTROLYTIC CAP. 22µF/16V M H7 or	CE1CMASSL220
	ELECTROLYTIC CAP. 22µF/16V M H7	526T226S
C 4005	ELECTROLYTIC CAP. 10µF/16V M H7 or	CE1CMASSL100
	ELECTROLYTIC CAP. 10µF/16V M H7	526T106S
C 4006	CERAMIC CAP. F Z 0.1µF/50V	3F40104T
C 4007	ELECTROLYTIC CAP. 3.3µF/50V M or	CE1JMASDL3R3
	ELECTROLYTIC CAP. 3.3µF/50V M	126F335S
C 4008	SEMICONDUCTOR CAP. F Z 0.1µF/25V or	CDA1EZS0F104
	SEMICONDUCTOR CAP. F Z 0.1µF/25V	1220520S
C 4009	CERAMIC CAP. X K 0.0068µF/16V	3X4C682T
C 4010	ELECTROLYTIC CAP. 10µF/16V M H7 or	CE1CMASSL100
	ELECTROLYTIC CAP. 10µF/16V M H7	526T106S
C 4011	CERAMIC CAP. F Z 0.1µF/50V	3F40104T
C 4012	SEMICONDUCTOR CAP. F Z 0.1µF/25V or	CDA1EZS0F104
	SEMICONDUCTOR CAP. F Z 0.1µF/25V	1220520S
C 4013	ELECTROLYTIC CAP. 1µF/50V M H7 or	CE1JMASSL010
	ELECTROLYTIC CAP. 1µF/50V M H7	526W105S
C 4014	ELECTROLYTIC CAP. 10µF/16V M H7 or	CE1CMASSL100
	ELECTROLYTIC CAP. 10µF/16V M H7	526T106S
C 4015	ELECTROLYTIC CAP. 47µF/16V M H7 or	CE1CMASSL470
	ELECTROLYTIC CAP. 47µF/16V M H7	526T476S
C 4016	CERAMIC CAP. Y M 0.01µF/16V or	CDA1CMT0Y103
	CERAMIC CAP. Y M 0.01µF/16V	3Y4D103T
C 4017	CERAMIC CAP. Y M 0.01µF/16V or	CDA1CMT0Y103
	CERAMIC CAP. Y M 0.01µF/16V	3Y4D103T
C 4019	MYLAR CAP. 0.047µF/100V J or	CMA2AJS00473
	MYLAR CAP. 0.047µF/100V J	1255473S
C 4020	CERAMIC CAP. Y M 0.01µF/16V or	CDA1CMT0Y103
	CERAMIC CAP. Y M 0.01µF/16V	3Y4D103T
C 4021	CERAMIC CAP. X K 0.0068µF/16V	3X4C682T
C 4022	CERAMIC CAP. X K 0.0027µF/16V	3X4C272T
C 4023	CERAMIC CAP. B J 220pH/50V	3B41221T
C 5110	SEMICONDUCTOR CAP. F Z 0.1µF/25V or	CDA1EZS0F104
	SEMICONDUCTOR CAP. F Z 0.1µF/25V	1220520S
C 6002	ELECTROLYTIC CAP. 2.2µF/50V M H7 or	CE1JMASSL2R2
	ELECTROLYTIC CAP. 2.2µF/50V M H7	526W225S
C 6003	CERAMIC CAP. F Z 0.047µF/50V	3F40473T
C 6004	CERAMIC CAP. SL J 10pH/50V	3S41100T
C 6005	CERAMIC CAP. SL J 15pH/50V	3S41150T
C 6006	CERAMIC CAP. F Z 0.1µF/50V	3F40104T
C 6007	ELECTROLYTIC CAP. 10µF/16V M	CE1CMASDL100
C 6008	ELECTROLYTIC CAP. 33µF/6.3V M	CE0KMASDL330
C 6009	CERAMIC CAP. F Z 0.022µF/50V or	CCD1JZS0F223
	CERAMIC CAP. F Z 0.022µF/50V	12F3223S
C 6010	CERAMIC CAP. SL J 27pH/50V or	CCD1JJSSL270
	CERAMIC CAP. SL J 27pH/50V	1270270S
C 6011	CERAMIC CAP. SL J 27pH/50V or	CCD1JJSSL270
	CERAMIC CAP. SL J 27pH/50V	1270270S
C 6012	ELECTROLYTIC CAP. 100µF/6.3V M H7 or	CE0KMASSL101
	ELECTROLYTIC CAP. 100µF/6.3V M H7	526R107S
C 6013	CERAMIC CAP. F Z 0.022µF/50V or	CCD1JZS0F223
	CERAMIC CAP. F Z 0.022µF/50V	12F3223S
C 6014	SEMICONDUCTOR CAP. SR K 0.1µF/25V or	CDA1EKS0X104
	SEMICONDUCTOR CAP. SR K 0.1µF/25V	12Y2104S
C 6015	SEMICONDUCTOR CAP. SR K 0.1µF/25V or	CDA1EKS0X104
	SEMICONDUCTOR CAP. SR K 0.1µF/25V	12Y2104S
C 6016	ELECTROLYTIC CAP. 220µF/6.3V M or	CE0KMASDL221
	ELECTROLYTIC CAP. 220µF/6.3V M	126A227S
C 6018	CERAMIC CAP. B K 1000pH/50V or	CCD1JKS0B102
	CERAMIC CAP. B K 0.001µF/50V	12B3102S
C 6019	CERAMIC CAP. B J 0.001µF/50V	3B41102T
C 6020	CERAMIC CAP. F Z 0.01µF/50V or	CCD1JZS0F103
	CERAMIC CAP. F Z 0.01µF/50V	12F3103S
C 6021	ELECTROLYTIC CAP. 22µF/16V M	CE1CMASDL220
C 6022	CERAMIC CAP. F Z 0.01µF/50V or	CCD1JZS0F103
	CERAMIC CAP. F Z 0.01µF/50V	12F3103S

Ref. No.	Description	Part No.
C 6023	ELECTROLYTIC CAP. 47μF/6.3V M H7 or	CE0KMASSL470
	ELECTROLYTIC CAP. 47μF/6.3V M H7	526R476S
C 6024	CERAMIC CAP. SL J 82pH/50V or	CCD1JJSSL820
	CERAMIC CAP. SL J 82pH/50V	1270820S
C 6025	CERAMIC CAP. B J 0.001μF/50V	3B41102T
C 6027	CERAMIC CAP. F Z 0.01μF/25V or	CDA1EZT0F103
	CERAMIC CAP. F Z 0.01μF/16V	1220842T
C 6029	ELECTROLYTIC CAP. 10μF/16V M LL H7 or	CA1C100SP018
	ELECTROLYTIC CAP. 10μF/16V M LL H7	CE1CMASHL100
C 6030	ELECTROLYTIC CAP. 2.2μF/50V M H7 or	CE1JMASSL2R2
	ELECTROLYTIC CAP. 2.2μF/50V M H7	526W225S
C 6031	ELECTROLYTIC CAP. 10μF/16V M H7 or	CE1CMASSL100
	ELECTROLYTIC CAP. 10μF/16V M H7	526T106S
C 6032	CERAMIC CAP. B K 2200pH/50V or	CCD1JKS0B222
	CERAMIC CAP. B K 0.0022μF/50V	12B3222S
C 6033	CERAMIC CAP. B J 0.001μF/50V	3B41102T
C 6034	CERAMIC CAP. B J 0.001μF/50V	3B41102T
C 6035	ELECTROLYTIC CAP. 10μF/16V M	CE1CMASDL100
C 6036	CERAMIC CAP. F Z 0.047μF/50V	3F40473T
C 6037	CERAMIC CAP. B J 180pH/50V	3B41181T
C 7001	CERAMIC CAP. F Z 0.047μF/50V	3F40473T
C 7002	CERAMIC CAP. F Z 0.047μF/50V	3F40473T
C 7003	CERAMIC CAP. X K 0.0022μF/16V	3X4C222T
C 7005	CERAMIC CAP. B J 0.001μF/50V	3B41102T
C 7006	ELECTROLYTIC CAP. 10μF/16V M	CE1CMASDL100
C 7007	ELECTROLYTIC CAP. 100μF/16V M or	CE1CMASDL101
	ELECTROLYTIC CAP. 100μF/16V M	126C107S
C 7008	CERAMIC CAP. SL J 56pH/50V	3S41560T
C 7009	ELECTROLYTIC CAP. 47μF/35V M or	CE1GMASDL470
	ELECTROLYTIC CAP. 47μF/35V M	126E476S
C 7010	MYLAR CAP. 0.1μF/50V J or	CMA1JJS00104
	MYLAR CAP. 0.1μF/50V J	2254104S
C 7011	MYLAR CAP. 0.1μF/50V J or	CMA1JJS00104
	MYLAR CAP. 0.1μF/50V J	2254104S
C 7012	MYLAR CAP. 0.1μF/50V J or	CMA1JJS00104
	MYLAR CAP. 0.1μF/50V J	2254104S
C 7013	CERAMIC CAP. X K 0.0022μF/16V	3X4C222T
C 7014	CERAMIC CAP. X K 0.0022μF/16V	3X4C222T
C 7015	CERAMIC CAP. X K 0.0068μF/16V	3X4C682T
C 7016	ELECTROLYTIC CAP. 470μF/6.3V M or	CE0KMASDL471
	ELECTROLYTIC CAP. 470μF/6.3V M	126A477S
C 7017	CERAMIC CAP. F Z 0.1μF/50V	3F40104T
C 7018	CERAMIC CAP. X K 0.0022μF/16V	3X4C222T
C 7020	CERAMIC CAP. B J 0.001μF/50V	3B41102T
C 7021	CERAMIC CAP. F Z 0.1μF/50V	3F40104T
C 7022	CERAMIC CAP. X K 0.0022μF/16V	3X4C222T
C 7024	ELECTROLYTIC CAP. 10μF/16V M	CE1CMASDL100
C 7025	ELECTROLYTIC CAP. 4.7μF/50V M or	CE1JMASDL4R7
	ELECTROLYTIC CAP. 4.7μF/50V M	126F475S
C 7501	CERAMIC CAP. F Z 0.01μF/50V or	CCD1JZS0F103
	CERAMIC CAP. F Z 0.01μF/50V	12F3103S
C 7502	ELECTROLYTIC CAP. 10μF/16V M	CE1CMASDL100
C 7503	CERAMIC CAP. X K 0.0033μF/16V	3X4C332T
C 7504	CERAMIC CAP. B J 470pH/50V	3B41471T
C 7505	CERAMIC CAP. B J 150pH/50V	3B41151T
	CONNECTORS	
CL6501	WIRE ASSEMBLY	WX1H2110-001
CN3001	STRAIGHT PIN CONNECTOR, 15P	1770635
CN5101	STRAIGHT PIN CONNECTOR, 9P	1770629
CN6001	STRAIGHT PIN CONNECTOR, 20P	1770640
CN6002	HINGED PIN CONNECTOR 4P	J3TRJ04TG003
	DIODES	
D 1001	RECTIFIER DIODE 1N4005 or	ND8Z001N4005
	RECTIFIER DIODE 1A5 or	NDQZ000001A5
	RECTIFIER DIODE 1N4005E	NDQZ01N4005E
D 1002	RECTIFIER DIODE 1N4005 or	ND8Z001N4005
	RECTIFIER DIODE 1A5 or	NDQZ000001A5
	RECTIFIER DIODE 1N4005E	NDQZ01N4005E
D 1003	RECTIFIER DIODE 1N4005 or	ND8Z001N4005
	RECTIFIER DIODE 1A5 or	NDQZ000001A5
	RECTIFIER DIODE 1N4005E	NDQZ01N4005E
D 1004	RECTIFIER DIODE 1N4005 or	ND8Z001N4005
	RECTIFIER DIODE 1A5 or	NDQZ000001A5
	RECTIFIER DIODE 1N4005E	NDQZ01N4005E
D 1005	RECTIFIER DIODE EG01C	QDPZ000EG01C
D 1006	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 1007	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 1008	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 1009	RECTIFIER DIODE EG01C	QDPZ000EG01C
D 1010	RECTIFIER DIODE RU3YX or	QD6Z000RU3YX
	FAST RECOVERY DIODE EGP20B or	NDQB000EGP20
	FAST RECOVERY DIODE EGP20D	NDQD000EGP20
D 1011	SWITCHING DIODE BAV21 or	NDQZ000BAV21
	SWITCHING DIODE MA188	QDPZ000MA188
D 1012	SCHOTTKY BARRIER DIODE AK03 LF-01 or	QDQZ0000AK03
	SCHOTTKY BARRIER DIODE SB040 or	NDQZ000SB040
	SCHOTTKY BARRIER DIODE 11EQS04	QD4Z011EQS04
D 1013	SWITCHING DIODE BAV18 or	NDQZ000BAV18
	SWITCHING DIODE MA178	QDPZ000MA178
D 1016	ZENER DIODE UZ-6.8BSA	QDTA0UZ6R8BS
D 1501	ZENER DIODE UZ-6.2BSB	QDTB0UZ6R2BS
D 1502	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 1503	ZENER DIODE UZ-12BSB	QDTB00UZ12BS
D 1504	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 1505	ZENER DIODE UZ-10BSC	QDTC00UZ10BS
D 1506	ZENER DIODE UZ-10BSA	QDTA00UZ10BS
D 1507	ZENER DIODE UZ-30BSA	QDTA00UZ30BS
D 1508	PCB JUMPER D0.6-P5.0	JW5.0T
D 1509	RECTIFIER DIODE 1N4005 or	ND8Z001N4005
	RECTIFIER DIODE 1A5 or	NDQZ000001A5
	RECTIFIER DIODE 1N4005E	NDQZ01N4005E
D 1510	RECTIFIER DIODE 1N4005 or	ND8Z001N4005
	RECTIFIER DIODE 1A5 or	NDQZ000001A5
	RECTIFIER DIODE 1N4005E	NDQZ01N4005E
D 3002	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 3003	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 3006	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 3007	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 6001	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 6004	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT

Ref. No.	Description	Part No.
D 6005	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 6006	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 6007	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 6008	LED SID1K10CXM or	QP4ZD1K10CXM
	LED LN66A.FN or	QP7Z000LN66A
	LED IR940 IR4 or	NP43000IR940
	LED IR940 IR5	NP44000IR940
D 6011	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 7001	ZENER DIODE UZ-6.2BSB	QDTB0UZ6R2BS
D 7002	ZENER DIODE UZ-6.2BSB	QDTB0UZ6R2BS
D 7003	ZENER DIODE UZ-6.2BSB	QDTB0UZ6R2BS
D 7501	ZENER DIODE UZ-5.1BS	QDTZ0UZ5R1BS
D 7502	ZENER DIODE UZ-5.1BS	QDTZ0UZ5R1BS
D 7503	ZENER DIODE UZ-5.1BS	QDTZ0UZ5R1BS
D 7504	ZENER DIODE UZ-5.1BS	QDTZ0UZ5R1BS
D 7505	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
J 26	RECTIFIER DIODE 1N4005 or	ND8Z001N4005
	RECTIFIER DIODE 1A5 or	NDQZ000001A5
	RECTIFIER DIODE 1N4005E	NDQZ01N4005E
J 134	RECTIFIER DIODE 1N4005 or	ND8Z001N4005
	RECTIFIER DIODE 1A5 or	NDQZ000001A5
	RECTIFIER DIODE 1N4005E	NDQZ01N4005E
	ICS	
IC1001 ⚠	PHOTO COUPLER PC120F	QPEZ00PC120F
IC1002	IC, KA431Z or	NSZLA0ZSM001
	IC, KIA431 or	NSZLA0ZJY001
	IC, AN1431T-(NSC) or	QSBLA0ZMS001
	IC, L5431	QSZLA0ZSY004
IC3001	IC, VIDEO LA7347	QSZLA0SSY006
IC3002	IC, LC89972M	QSMLA0SSY011
IC4001	IC, AUDIO LA7286	QSZLA0SSY007
IC6001	MICROCONTROLLER 8BIT SY/CXP88224-103Q or	QSMQB0RSN027
	MICROCONTROLLER 8BIT SY/CXP88224-104Q	QSMQC0RSN027
IC6002	IC, COMPARATOR KA339 or	NSBLA0SSM002
	IC, COMPARATOR KIA339P	NSBLA0SJY019
IC6003	IC, OP-AMP. KA324 or	NSBLA0SSM001
	IC, OP-AMP. KIA324P DIP-14	NSBLA0SJY002
IC6004	IC, TA7291S	14LW342
IC6005	IC, RESET 3.1V KIA7031P(TO-92) or	NSBLA0TJY009
	IC, RESET IC,-PST529H-2 or	GR591401****
	IC, RESET 3.3V KA7533Z(TO-92)	NSBLA0TSM003
IC6008	IC, MEMORY 24LC01B/P or	NSMMA0SMH002
	IC, ST24C01B1 or	NSMMA0ZSS002
	IC, X24C01AP	NSMMA0SXC002
IC7001	ZENER DIODE UZT33MTA	QCTZ00UZT33M
IC7501	IC, NJU4052BD or	14D0438
	IC, UPD4052BC or	QSMLA0SNE004
	IC, TC4052BP or	QSMLA0STS003
	IC, HEF4052BP	NSMLA0SPH001
	COILS	
L 1001 ⚠	LINE FILTER FK0B160MH16	1170567
L 1002 ⚠	LINE FILTER 68MH LF-4D-683	LLBG00ZKQ002
L 1002	LINE FILTER 68MH ELF-18D222FN	LLBG00ZMS006
L 1003	LEAD INDUCTOR 22μH-K	LLARKLUTU220

Ref. No.	Description	Part No.
L 1004	LEAD INDUCTOR 10μH-K	LLARKLUTU100
L 3001	INDUCTOR 180μH-K-26T or	LLAXKDTKA181
	INDUCTOR 180μH-K-26T or	LLAXKATTU181
	INDUCTOR 180μH-K	LLAXKCPFG181
L 3002	INDUCTOR 82μH-K-26T or	LLAXKDTKA820
	INDUCTOR 82μH-K-26T or	LLAXKATTU820
	INDUCTOR 82μH-K	LLAXKCPFG820
L 3003	INDUCTOR 330μH-K-26T or	LLAXKDTKA331
	INDUCTOR 330μH-K	LLAXKCPFG331
L 3004	INDUCTOR 56μH-K-26T or	LLAXKDTKA560
	INDUCTOR 56μH-K-26T or	LLAXKATTU560
	INDUCTOR 56μH-K	LLAXKCPFG560
L 3005	INDUCTOR 27μH-K-26T or	LLAXKDTKA270
	INDUCTOR 27μH-K-26T or	LLAXKATTU270
	INDUCTOR 27μH-K	LLAXKCPFG270
L 3006	INDUCTOR 10μH-K-26T or	LLAXKDTKA100
	INDUCTOR 10μH-K-26T or	LLAXKATTU100
	INDUCTOR 10μH-K	LLAXKCPFG100
L 3007	INDUCTOR 330μH-K-26T or	LLAXKDTKA331
	INDUCTOR 330μH-K	LLAXKCPFG331
L 3008	INDUCTOR 27μH-K-26T or	LLAXKDTKA270
	INDUCTOR 27μH-K-26T or	LLAXKATTU270
	INDUCTOR 27μH-K	LLAXKCPFG270
L 3009	INDUCTOR 68μH-K-26T or	LLAXKDTKA680
	INDUCTOR 68μH-K-26T or	LLAXKATTU680
	INDUCTOR 68μH-K	LLAXKCPFG680
L 3010	INDUCTOR 68μH-K-26T or	LLAXKDTKA680
	INDUCTOR 68μH-K-26T or	LLAXKATTU680
	INDUCTOR 68μH-K	LLAXKCPFG680
L 3012	INDUCTOR 47μH-K-5FT or	LLARKDSKA470
	INDUCTOR 47μH-K-5FT or	LLARKBSTU470
	INDUCTOR 47μH-K-5FT	LLARKBSFS470
L 3013	INDUCTOR 18μH-K-26T or	LLAXKDTKA180
	INDUCTOR 18μH-K-26T or	LLAXKATTU180
	INDUCTOR 18μH-K	LLAXKCPFG180
L 3014	INDUCTOR 4.7μH-K-5FT or	LLARKDSKA4R7
	INDUCTOR 4.7μH-K-5FT or	LLARKBSTU4R7
	INDUCTOR 4.7μH-K-5FT	LLARKBSFS4R7
L 3090	PCB JUMPER D0.6-P5.0	JW5.0T
L 3091	INDUCTOR 10μH-K-26T or	LLAXKDTKA100
	INDUCTOR 10μH-K-26T or	LLAXKATTU100
	INDUCTOR 10μH-K	LLAXKCPFG100
L 6002	INDUCTOR 100μH-K-5FT or	LLARKDSKA101
	INDUCTOR 100μH-K-5FT or	LLARKCSTU101
	INDUCTOR 100μH-K-5FT	LLARKBSFS101
L 7001	INDUCTOR 100μH-K-5FT or	LLARKDSKA101
	INDUCTOR 100μH-K-5FT or	LLARKCSTU101
	INDUCTOR 100μH-K-5FT	LLARKBSFS101
L 7002	INDUCTOR 100μH-K-5FT or	LLARKDSKA101
	INDUCTOR 100μH-K-5FT or	LLARKCSTU101
	INDUCTOR 100μH-K-5FT	LLARKBSFS101
T 4001	COIL, OSC 7QM3 C-14284A or	LFA07V0VD001
	COIL, OSC K7-J1 R12 N657X	LFA07V0MM038
	TRANSISTORS	
Q 1001 ⚠	TRANSISTOR 2SC4204	QQSZ02SC4204
Q 1001	TRANSISTOR 2SC3576	QQSZ02SC3576
Q 1002 ⚠	TRANSISTOR 2SC4517	QQPZ02SC4517
Q 1002	TRANSISTOR 2SC3866	QQPZ02SC3866
Q 1501	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KSC2785(Y) or	NQSY0KSC2785
	TRANSISTOR 2SC536SP(E) or	C536SEZ
	TRANSISTOR 2SC536SP(F)	C536SFZ
Q 1502	TRANSISTOR 2SD1581(K) or	QQPK02SD1581
	TRANSISTOR 2SD1581(L) or	QQPL02SD1581
	TRANSISTOR 2SD1581(M) or	QQPM02SD1581
	TRANSISTOR 2SC3246(J) or	QQQJ02SC3246

Ref. No.	Description	Part No.
	TRANSISTOR 2SC3246(K)	QQQK02SC3246
Q 1503	RES. BUILT-IN TRANSISTOR KRA101M or	NQSZ0KRA101M
	RES. BUILT-IN TRANSISTOR KSR2205 or	NQSZ0KSR2205
	RES. BUILT-IN TRANSISTOR 2SA1654	QQSZ02SA1654
Q 1504	RES. BUILT-IN TRANSISTOR KRA103M or	NQSZ0KRA103M
	RES. BUILT-IN TRANSISTOR KSR2203 or	NQSZ0KSR2203
	RES. BUILT-IN TRANSISTOR 2SA1346	A1346Z
Q 1505	TRANSISTOR 2SD1581(K) or	QQPK02SD1581
	TRANSISTOR 2SD1581(L) or	QQPL02SD1581
	TRANSISTOR 2SD1581(M) or	QQPM02SD1581
	TRANSISTOR 2SC3246(J) or	QQQJ02SC3246
	TRANSISTOR 2SC3246(K)	QQQK02SC3246
Q 1506	TRANSISTOR KTA1266(GR) or	NQS40KTA1266
	TRANSISTOR 2SA1317(S) or	A1317SZ
	TRANSISTOR 2SA1317(T)	A1317TZ
Q 1507	RES. BUILT-IN TRANSISTOR KRC103M or	NQSZ0KRC103M
	RES. BUILT-IN TRANSISTOR KSR1203 or	NQSZ0KSR1203
	RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
Q 3001	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KSC2785(Y) or	NQSY0KSC2785
	TRANSISTOR 2SC536SP(E) or	C536SEZ
	TRANSISTOR 2SC536SP(F)	C536SFZ
Q 3003	TRANSISTOR 2SC3193(Y) or	NQSY02SC3193
	TRANSISTOR 2SC2839(E) or	C2839EZ
	TRANSISTOR 2SC2839(F)	C2839FZ
Q 3004	TRANSISTOR 2SC3193(Y) or	NQSY02SC3193
	TRANSISTOR 2SC2839(E) or	C2839EZ
	TRANSISTOR 2SC2839(F)	C2839FZ
Q 3007	TRANSISTOR KTA1267(GR) or	NQS10KTA1267
	TRANSISTOR KSA1175(Y) or	NQSY0KSA1175
	TRANSISTOR 2SA608SP(E) or	A608SEZ
	TRANSISTOR 2SA608SP(F)	A608SFZ
Q 3009	TRANSISTOR KTA1267(GR) or	NQS10KTA1267
	TRANSISTOR KSA1175(Y) or	NQSY0KSA1175
	TRANSISTOR 2SA608SP(E) or	A608SEZ
	TRANSISTOR 2SA608SP(F)	A608SFZ
Q 3010	TRANSISTOR KTA1267(GR) or	NQS10KTA1267
	TRANSISTOR KSA1175(Y) or	NQSY0KSA1175
	TRANSISTOR 2SA608SP(E) or	A608SEZ
	TRANSISTOR 2SA608SP(F)	A608SFZ
Q 3011	RES. BUILT-IN TRANSISTOR KRA109M or	NQSZ0KRA109M
	RES. BUILT-IN TRANSISTOR KSR2208 or	NQSZ0KSR2208
	RES. BUILT-IN TRANSISTOR 2SA1347	QQSZ02SA1347
Q 3012	RES. BUILT-IN TRANSISTOR KRC103M or	NQSZ0KRC103M
	RES. BUILT-IN TRANSISTOR KSR1203 or	NQSZ0KSR1203
	RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
Q 3013	TRANSISTOR 2SC3193(Y) or	NQSY02SC3193
	TRANSISTOR 2SC2839(E) or	C2839EZ
	TRANSISTOR 2SC2839(F)	C2839FZ
Q 3090	TRANSISTOR KTA1266(GR) or	NQS40KTA1266
	TRANSISTOR 2SA1317(S) or	A1317SZ
	TRANSISTOR 2SA1317(T)	A1317TZ
Q 3091	RES. BUILT-IN TRANSISTOR KRC102M	NQSZ0KRC102M
Q 4001	TRANSISTOR 2SC3331(T) or	QSC3331TNPAA
	TRANSISTOR 2SC3331(U)	QSC3331UNPAA
Q 4002	TRANSISTOR KTA1267(GR) or	NQS10KTA1267
	TRANSISTOR KSA1175(Y) or	NQSY0KSA1175
	TRANSISTOR 2SA608SP(E) or	A608SEZ
	TRANSISTOR 2SA608SP(F)	A608SFZ
Q 4003	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KSC2785(Y) or	NQSY0KSC2785
	TRANSISTOR 2SC536SP(E) or	C536SEZ
	TRANSISTOR 2SC536SP(F)	C536SFZ
Q 4004	RES. BUILT-IN TRANSISTOR KRC103M or	NQSZ0KRC103M
	RES. BUILT-IN TRANSISTOR KSR1203 or	NQSZ0KSR1203
	RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z

Ref. No.	Description	Part No.
Q 6002	TRANSISTOR KTA1267(GR) or	NQS10KTA1267
	TRANSISTOR KSA1175(Y) or	NQSY0KSA1175
	TRANSISTOR 2SA608SP(E) or	A608SEZ
	TRANSISTOR 2SA608SP(F)	A608SFZ
Q 6004	RES. BUILT-IN TRANSISTOR KRC103M or	NQSZ0KRC103M
	RES. BUILT-IN TRANSISTOR KSR1203 or	NQSZ0KSR1203
	RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
Q 6007	PHOTO TRANSISTOR PT380FB	QP4B00PT380F
Q 6008	PHOTO TRANSISTOR PT380FB	QP4B00PT380F
Q 7001	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KSC2785(Y) or	NQSY0KSC2785
	TRANSISTOR 2SC536SP(E) or	C536SEZ
	TRANSISTOR 2SC536SP(F)	C536SFZ
Q 7002	RES. BUILT-IN TRANSISTOR KRA101M or	NQSZ0KRA101M
	RES. BUILT-IN TRANSISTOR KSR2205 or	NQSZ0KSR2205
	RES. BUILT-IN TRANSISTOR 2SA1654	QQSZ02SA1654
Q 7003	RES. BUILT-IN TRANSISTOR KRA101M or	NQSZ0KRA101M
	RES. BUILT-IN TRANSISTOR KSR2205 or	NQSZ0KSR2205
	RES. BUILT-IN TRANSISTOR 2SA1654	QQSZ02SA1654
Q 7004	RES. BUILT-IN TRANSISTOR KRA101M or	NQSZ0KRA101M
	RES. BUILT-IN TRANSISTOR KSR2205 or	NQSZ0KSR2205
	RES. BUILT-IN TRANSISTOR 2SA1654	QQSZ02SA1654
Q 7007	TRANSISTOR KTC3199(GR) or	NQS10KTC3199
	TRANSISTOR KSC2785(Y) or	NQSY0KSC2785
	TRANSISTOR 2SC536SP(E) or	C536SEZ
	TRANSISTOR 2SC536SP(F)	C536SFZ
	RESISTORS	
J 77	CARBON RES. 1/4W J 1K Ω	RCX4JZPZ0102
R 1001	FIXED METAL OXIDE FILM RES. 2W J 4.7 Ω	RN024R7KE005
R 1002	FIXED METAL OXIDE FILM RES. 2W J 82K Ω or	RN02JZPZ0823
	FIXED METAL OXIDE FILM RES. 2W J 82K Ω	1330513
R 1004	CARBON RES. 1/4W J 82K Ω	RCX4JATZ0823
R 1005	CARBON RES. 1/4W J 82K Ω	RCX4JATZ0823
R 1006	CARBON RES. 1/4W J 82K Ω	RCX4JATZ0823
R 1007	CARBON RES. 1/4W J 82K Ω	RCX4JATZ0823
R 1008	CARBON RES. 1/4W J 39 Ω	RCX4JATZ0390
R 1009	CARBON RES. 1/4W J 39 Ω	RCX4JATZ0390
R 1010	CARBON RES. 1/4W J 39 Ω	RCX4JATZ0390
R 1011	CARBON RES. 1/4W J 3.9K Ω	RCX4JATZ0392
R 1012	CARBON RES. 1/4W J 470 Ω	RCX4JATZ0471
R 1013	CARBON RES. 1/4W J 68K Ω	RCX4JATZ0683
R 1014	CARBON RES. 1/4W J 68K Ω	RCX4JATZ0683
R 1015	CARBON RES. 1/4W J 68K Ω	RCX4JATZ0683
R 1016	CARBON RES. 1/4W J 68K Ω	RCX4JATZ0683
R 1017	CARBON RES. 1/4W J 2.7K Ω	RCX4JATZ0272
R 1018	CARBON RES. 1/4W J 2.7 Ω	RCX4JATZ02R7
R 1019	CARBON RES. 1/4W J 2.7 Ω	RCX4JATZ02R7
R 1020	CARBON RES. 1/4W J 220 Ω	RCX4JATZ0221
R 1021	CARBON RES. 1/4W J 1K Ω	RCX4JATZ0102
R 1022	CARBON RES. 1/4W J 47 Ω	RCX4JATZ0470
R 1023	CARBON RES. 1/4W G 3K Ω	RCX4GATZ0302
R 1024	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R 1025	CARBON RES. 1/4W G 2.2K Ω	RCX4GATZ0222
R 1501	CARBON RES. 1/4W J 4.7K Ω	RCX4JATZ0472
R 1502	CARBON RES. 1/4W J 15K Ω	RCX4JATZ0153
R 1503	FIXED METAL OXIDE FILM RES. 1W J 1.8K Ω	5330478
R 1504	CARBON RES. 1/4W J 4.7K Ω	RCX4JATZ0472
R 1505	CARBON RES. 1/4W J 4.7K Ω	RCX4JATZ0472
R 1506	CARBON RES. 1/4W J 1.5K Ω	RCX4JATZ0152
R 1507	CARBON RES. 1/4W J 1.3K Ω	RCX4JATZ0132
R 1508	CARBON RES. 1/4W J 100K Ω	RCX4JATZ0104
R 1509	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R 1510	CARBON RES. 1/4W J 470 Ω	RCX4JATZ0471
R 1511	CARBON RES. 1/4W J 22K Ω	RCX4JATZ0223
R 1513	PCB JUMPER D0.6-P5.0	JW5.0T
R 1514	CARBON RES. 1/4W J 47K Ω	RCX4JATZ0473

Ref. No.	Description	Part No.
R 1515	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 3001	CARBON RES. 1/4W J 1.5KΩ	RCX4JATZ0152
R 3002	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 3003	CARBON RES. 1/4W J 470Ω	RCX4JATZ0471
R 3004	CARBON RES. 1/4W J 3.9KΩ	RCX4JATZ0392
R 3005	CARBON RES. 1/4W J 1.5KΩ	RCX4JATZ0152
R 3006	CARBON RES. 1/4W J 3.9KΩ	RCX4JATZ0392
R 3007	CARBON RES. 1/4W J 1.5KΩ	RCX4JATZ0152
R 3008	CARBON RES. 1/4W J 5.6KΩ	RCX4JATZ0562
R 3009	CARBON RES. 1/4W J 8.2KΩ	RCX4JATZ0822
R 3010	CARBON RES. 1/4W J 22KΩ	RCX4JATZ0223
R 3011	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 3012	CARBON RES. 1/4W J 3.9KΩ	RCX4JATZ0392
R 3013	CARBON RES. 1/4W J 100Ω	RCX4JATZ0101
R 3014	CARBON RES. 1/4W J 2.2KΩ	RCX4JATZ0222
R 3016	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 3017	CARBON RES. 1/4W J 390Ω	RCX4JATZ0391
R 3018	CARBON RES. 1/4W J 390Ω	RCX4JATZ0391
R 3019	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 3020	CARBON RES. 1/4W J 680Ω	RCX4JATZ0681
R 3021	CARBON RES. 1/4W J 1.2KΩ	RCX4JATZ0122
R 3022	CARBON RES. 1/4W J 330Ω	RCX4JATZ0331
R 3024	CARBON RES. 1/4W J 27KΩ	RCX4JATZ0273
R 3025	CARBON RES. 1/4W J 8.2KΩ	RCX4JATZ0822
R 3026	CARBON RES. 1/4W J 5.6KΩ	RCX4JATZ0562
R 3027	CARBON RES. 1/4W J 470Ω	RCX4JATZ0471
R 3028	CARBON RES. 1/4W J 2.7KΩ	RCX4JATZ0272
R 3029	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 3030	CARBON RES. 1/4W J 470Ω	RCX4JATZ0471
R 3031	CARBON RES. 1/4W J 2.7KΩ	RCX4JATZ0272
R 3032	CARBON RES. 1/4W J 15KΩ	RCX4JATZ0153
R 3033	CARBON RES. 1/4W J 680Ω	RCX4JATZ0681
R 3034	CARBON RES. 1/4W J 100Ω	RCX4JATZ0101
R 3035	CARBON RES. 1/4W J 470Ω	RCX4JATZ0471
R 3036	CARBON RES. 1/4W J 2.2KΩ	RCX4JATZ0222
R 3037	CARBON RES. 1/4W J 5.6KΩ	RCX4JATZ0562
R 3038	CARBON RES. 1/4W J 4.7KΩ	RCX4JATZ0472
R 3039	CARBON RES. 1/4W J 1.8KΩ	RCX4JATZ0182
R 3040	CARBON RES. 1/4W J 470Ω	RCX4JATZ0471
R 3041	CARBON RES. 1/4W J 470Ω	RCX4JATZ0471
R 3042	CARBON RES. 1/4W J 2.7KΩ	RCX4JATZ0272
R 3043	CARBON RES. 1/4W J 2.7KΩ	RCX4JATZ0272
R 3044	CARBON RES. 1/4W J 2.7KΩ	RCX4JATZ0272
R 3045	CARBON RES. 1/4W J 560Ω	RCX4JATZ0561
R 3046	CARBON RES. 1/4W J 390Ω	RCX4JATZ0391
R 3047	CARBON RES. 1/4W J 1.8KΩ	RCX4JATZ0182
R 3053	CARBON RES. 1/4W J 1MΩ	RCX4JATZ0105
R 3054	CARBON RES. 1/4W J 8.2KΩ	RCX4JATZ0822
R 3056	CARBON RES. 1/4W J 22KΩ	RCX4JATZ0223
R 3057	CARBON RES. 1/4W J 820Ω	RCX4JATZ0821
R 3058	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 3059	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 3060	CARBON RES. 1/4W J 270Ω	RCX4JATZ0271
R 3061	CARBON RES. 1/4W J 270Ω	RCX4JATZ0271
R 3062	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 3063	CARBON RES. 1/4W J 82KΩ	RCX4JATZ0823
R 3064	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 3066	CARBON RES. 1/4W J 5.6KΩ	RCX4JATZ0562
R 3067	CARBON RES. 1/4W J 2.7KΩ	RCX4JATZ0272
R 3068	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 3090	CARBON RES. 1/4W J 680Ω	RCX4JATZ0681
R 3091	CARBON RES. 1/4W J 680Ω	RCX4JATZ0681
R 3092	CARBON RES. 1/4W J 220Ω	RCX4JATZ0221
R 4002	CARBON RES. 1/4W J 22KΩ	RCX4JATZ0223
R 4003	CARBON RES. 1/4W J 330KΩ	RCX4JATZ0334
R 4004	CARBON RES. 1/4W J 12KΩ	RCX4JATZ0123

Ref. No.	Description	Part No.
R 4005	CARBON RES. 1/4W J 120Ω	RCX4JATZ0121
R 4006	CARBON RES. 1/4W J 5.6KΩ	RCX4JATZ0562
R 4007	CARBON RES. 1/4W J 1.8MΩ	RCX4JATZ0185
R 4008	CARBON RES. 1/4W J 15KΩ	RCX4JATZ0153
R 4009	CARBON RES. 1/4W J 6.8KΩ	RCX4JATZ0682
R 4010	CARBON RES. 1/4W J 150Ω	RCX4JATZ0151
R 4011	CARBON RES. 1/4W J 1.8KΩ	RCX4JATZ0182
R 4012	CARBON RES. 1/4W J 1.8KΩ	RCX4JATZ0182
R 4013	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 4014	CARBON RES. 1/4W J 2.2KΩ	RCX4JATZ0222
R 4018	CARBON RES. 1/4W J 22Ω	RCX4JATZ0220
R 4019	CARBON RES. 1/4W J 47Ω	RCX4JATZ0470
R 4020	CARBON RES. 1/4W J 4.7KΩ	RCX4JATZ0472
R 4021	CARBON RES. 1/4W J 4.7Ω	RCX4JATZ04R7
R 4022	CARBON RES. 1/4W J 3.9KΩ	RCX4JATZ0392
R 4023	CARBON RES. 1/4W J 2.2KΩ	RCX4JATZ0222
R 4024	CARBON RES. 1/4W J 180Ω	RCX4JATZ0181
R 4025	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 4027	CARBON RES. 1/4W J 2.2KΩ	RCX4JATZ0222
R 6001	CARBON RES. 1/4W J 4.7KΩ	RCX4JATZ0472
R 6003	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 6004	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 6006	CARBON RES. 1/4W J 47KΩ	RCX4JATZ0473
R 6007	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 6009	PCB JUMPER D0.6-P5.0	JW5.0T
R 6011	CARBON RES. 1/4W J 1Ω	RCX4JATZ0010
R 6012	CARBON RES. 1/4W J 1Ω	RCX4JATZ0010
R 6013	CARBON RES. 1/4W J 1Ω	RCX4JATZ0010
R 6014	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 6015	CARBON RES. 1/4W J 1.5KΩ	RCX4JATZ0152
R 6016	CARBON RES. 1/4W J 220Ω	RCX4JATZ0221
R 6017	CARBON RES. 1/4W J 22KΩ	RCX4JATZ0223
R 6018	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 6019	CARBON RES. 1/4W J 12KΩ	RCX4JATZ0123
R 6024	CARBON RES. 1/4W J 6.2Ω	RCX4JATZ06R2
R 6025	CARBON RES. 1/4W J 6.2Ω	RCX4JATZ06R2
R 6026	CARBON RES. 1/4W J 1.8KΩ	RCX4JATZ0182
R 6027	CARBON RES. 1/4W J 1KΩ	RCX4JATZ0102
R 6028	CARBON RES. 1/4W J 1.2KΩ	RCX4JATZ0122
R 6029	CARBON RES. 1/4W J 1.5KΩ	RCX4JATZ0152
R 6030	CARBON RES. 1/4W J 2.2KΩ	RCX4JATZ0222
R 6031	CARBON RES. 1/4W J 3.9KΩ	RCX4JATZ0392
R 6032	CARBON RES. 1/4W J 8.2KΩ	RCX4JATZ0822
R 6035	CARBON RES. 1/4W J 4.7KΩ	RCX4JATZ0472
R 6036	CARBON RES. 1/4W J 47KΩ	RCX4JATZ0473
R 6037	CARBON RES. 1/4W J 39KΩ	RCX4JATZ0393
R 6038	CARBON RES. 1/4W J 2.2KΩ	RCX4JATZ0222
R 6039	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 6041	CARBON RES. 1/4W J 2.2KΩ	RCX4JATZ0222
R 6042	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 6043	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 6044	CARBON RES. 1/4W J 330KΩ	RCX4JATZ0334
R 6045	CARBON RES. 1/4W J 4.7KΩ	RCX4JATZ0472
R 6046	CARBON RES. 1/4W J 47KΩ	RCX4JATZ0473
R 6047	CARBON RES. 1/4W J 4.7MΩ	RCX4JATZ0475
R 6050	CARBON RES. 1/4W J 470Ω	RCX4JATZ0471
R 6051	CARBON RES. 1/4W J 2.2KΩ	RCX4JATZ0222
R 6052	CARBON RES. 1/4W J 330KΩ	RCX4JATZ0334
R 6053	PCB JUMPER D0.6-P5.0	JW5.0T
R 6054	CARBON RES. 1/4W J 180KΩ	RCX4JATZ0184
R 6055	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 6056	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 6057	CARBON RES. 1/4W J 10KΩ	RCX4JATZ0103
R 6058	CARBON RES. 1/4W J 2.2KΩ	RCX4JATZ0222
R 6059	CARBON RES. 1/4W J 220KΩ	RCX4JATZ0224
R 6060	CARBON RES. 1/4W J 47KΩ	RCX4JATZ0473

Ref. No.	Description	Part No.
R 6062	CARBON RES. 1/4W J 6.8K Ω	RCX4JATZ0682
R 6063	CARBON RES. 1/4W J 2.7K Ω	RCX4JATZ0272
R 6064	CARBON RES. 1/4W J 680K Ω	RCX4JATZ0684
R 6065	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R 6066	CARBON RES. 1/4W J 470K Ω	RCX4JATZ0474
R 6067	CARBON RES. 1/4W J 2.2K Ω	RCX4JATZ0222
R 6068	CARBON RES. 1/4W J 330K Ω	RCX4JATZ0334
R 6069	CARBON RES. 1/4W J 56 Ω	RCX4JATZ0560
R 6070	CARBON RES. 1/4W J 56 Ω	RCX4JATZ0560
R 6071	CARBON RES. 1/4W J 56 Ω	RCX4JATZ0560
R 6072	CARBON RES. 1/4W J 56 Ω	RCX4JATZ0560
R 6075	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6079	CARBON RES. 1/4W J 680K Ω	RCX4JATZ0684
R 6080	CARBON RES. 1/4W J 680K Ω	RCX4JATZ0684
R 6083	CARBON RES. 1/4W J 47K Ω	RCX4JATZ0473
R 6084	CARBON RES. 1/4W J 150 Ω	RCX4JATZ0151
R 6085	CARBON RES. 1/4W J 22K Ω	RCX4JATZ0223
R 6086	CARBON RES. 1/4W J 22K Ω	RCX4JATZ0223
R 6087	CARBON RES. 1/4W J 22K Ω	RCX4JATZ0223
R 6088	CARBON RES. 1/4W J 22K Ω	RCX4JATZ0223
R 6102	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6104	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6105	CARBON RES. 1/4W J 4.7K Ω	RCX4JATZ0472
R 6108	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6112	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6113	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6115	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6118	CARBON RES. 1/4W J 22K Ω	RCX4JATZ0223
R 6119	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6121	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6123	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6127	CARBON RES. 1/4W J 1K Ω	RCX4JATZ0102
R 6133	CARBON RES. 1/4W J 18K Ω	RCX4JATZ0183
R 6134	CARBON RES. 1/4W J 18K Ω	RCX4JATZ0183
R 6135	CARBON RES. 1/4W J 100 Ω	RCX4JATZ0101
R 6136	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6137	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6140	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6141	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 6142	CARBON RES. 1/4W J 22K Ω	RCX4JATZ0223
R 6143	CARBON RES. 1/4W J 4.7K Ω	RCX4JATZ0472
R 7001	CARBON RES. 1/4W J 47K Ω	RCX4JATZ0473
R 7002	CARBON RES. 1/4W J 1K Ω	RCX4JATZ0102
R 7003	CARBON RES. 1/4W J 33K Ω	RCX4JATZ0333
R 7004	CARBON RES. 1/4W J 1.5K Ω	RCX4JATZ0152
R 7005	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 7006	CARBON RES. 1/4W J 15K Ω	RCX4JATZ0153
R 7007	CARBON RES. 1/4W J 27K Ω	RCX4JATZ0273
R 7008	CARBON RES. 1/4W J 27K Ω	RCX4JATZ0273
R 7009	CARBON RES. 1/4W J 39K Ω	RCX4JATZ0393
R 7010	CARBON RES. 1/4W J 15K Ω	RCX4JATZ0153
R 7011	CARBON RES. 1/4W J 560K Ω	RCX4JATZ0564
R 7012	CARBON RES. 1/4W J 560K Ω	RCX4JATZ0564
R 7013	CARBON RES. 1/4W J 75 Ω	RCX4JATZ0750
R 7016	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 7017	CARBON RES. 1/4W J 100K Ω	RCX4JATZ0104
R 7501	CARBON RES. 1/4W J 22K Ω	RCX4JATZ0223
R 7502	CARBON RES. 1/4W J 100K Ω	RCX4JATZ0104
R 7503	CARBON RES. 1/4W J 10K Ω	RCX4JATZ0103
R 7504	CARBON RES. 1/4W J 75 Ω	RCX4JATZ0750
R 7505	CARBON RES. 1/4W J 68 Ω	RCX4JATZ0680
R 7506	CARBON RES. 1/4W J 150 Ω	RCX4JATZ0151
R 7507	CARBON RES. 1/4W J 150 Ω	RCX4JATZ0151
R 7508	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821
R 7509	CARBON RES. 1/4W J 22K Ω	RCX4JATZ0223
R 7510	CARBON RES. 1/4W J 820 Ω	RCX4JATZ0821

Ref. No.	Description	Part No.
R 7511	CARBON RES. 1/4W J 22K Ω	RCX4JATZ0223
R 7512	CARBON RES. 1/4W J 1K Ω	RCX4JATZ0102
	SWITCHES	
SW6002	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW6003	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW6004	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW6005	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW6006	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW6007	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW6008	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW6009	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW6011	PUSH SWITCH SKHMPF or	SSP0101AL002
	PUSH SWITCH HKW0602-01-010	SSP0101HD001
SW6012	PUSH SWITCH SPPB61 or	SSP0102AL001
	PUSH SWITCH JPS1120-0601H	SSP0102SR001
	VARIABLE RESISTORS	
VR3001	CARBON P.O.T. 4.7K Ω B or	638A472
	CARBON P.O.T. 5K Ω B or	VRCB502HH005
	CARBON P.O.T. 5K Ω B	138J780
VR3002	CARBON P.O.T. 4.7K Ω B or	638A472
	CARBON P.O.T. 5K Ω B or	VRCB502HH005
	CARBON P.O.T. 5K Ω B	138J780
VR3003	CARBON P.O.T. 4.7K Ω B or	638A472
	CARBON P.O.T. 5K Ω B or	VRCB502HH005
	CARBON P.O.T. 5K Ω B	138J780
VR6001	CARBON P.O.T. 100K Ω B or	638A104

Ref. No.	Description	Part No.
	CARBON P.O.T. 100K Ω B or	VRCB104HH005
	CARBON P.O.T. 100K Ω B	138J785
	CRYSTAL OSCILLATORS	
X 3001	X'TAL 4.433619MHZ or	1811388
	X'TAL 4.433619MHZ or	1811366
	X'TAL 4.433619MHZ	FXC445LGM001
X 6001	X'TAL 12MHZ or	FXE126LFS001
	X'TAL 12MHZ or	FXE126LCU002
	X'TAL 12MHZ or	FXE126LDS011
	X'TAL 12MHZ	FXE126LGM001
X 6002	X'TAL 32KHZ(10PPM)	1811350
	MISCELLANEOUS	
	SUMITUBE	0VM405336
	LEAD CLAMPER	1790356
	BEAD CORE C0-022Z or	XL03004JT001
	BEAD CORE HF70BB5X5X2	XL03005TE002
2B 4	HOLDER, F.I.P.(L)	0VM301820
2B 5	HOLDER, F.I.P.(R)	0VM301821
2B 8	BUSH, LED	6N50114
2B 9	HOLDER, L.E.D.	0VM405711
2B 10	PLATE, GROUND FTZ(U7 PAL)	0VM301929
2L 071	SCREW, S-TIGHT M3X5 BIND HEAD+	GBMS3050
A 17	JACK BOARD	0VM201316
AC1001 ⚠	AC CORD LA-1517-1	WAE0202LW011
F 1001 ⚠	FUSE T1.60AH250V or	PAGC20BAG162
	FUSE T1.60AH250V	PBGZ20CDX006
FH1001	FUSE HOLDER FH-V-03078-1 or	XH01Z00DK002
	HOLDER, FUSE CNT41-0014	1790424
FH1002	FUSE HOLDER FH-V-03078-1 or	XH01Z00DK002
	HOLDER, FUSE CNT41-0014	1790424
FP6001	F.I.P. 10-BT-121G	TVFD1C0FT025
JK7501	SKIRT JACK, 21P CSS5021-1701R	JGZL210SR001
PS6001	REEL SENSOR GP1S38 or	PCZLAZZSH001
	REEL SENSOR SG-224	PCZLAZZKK004
T 1001 ⚠	PULSE TRANS S1025C A0566	LTT00EPSA005
TU7001	TUNER/IF/CONV. UNIT EC-RB-0163	UTUNPLBNE010

Function (MCV-B) CBA

Ref. No.	DescriPtion	Part No.
	Function (MCV-B) CBA Consists of the following:	———
	CONNECTOR	
CN5501	HINGED SOCKET CONNECTOR 4P TRC-X04X-A2 BLACK	JCTRG04TG002
	RESISTORS	
R 5502	CARBON RES. 1/4W J 8.2K Ω	RCX4JATZ0822
R 5503	CARBON RES. 1/4W J 3.9K Ω	RCX4JATZ0392
R 5504	CARBON RES. 1/4W J 2.2K Ω	RCX4JATZ0222
R 5505	CARBON RES. 1/4W J 1.5K Ω	RCX4JATZ0152
R 5506	CARBON RES. 1/4W J 1.2K Ω	RCX4JATZ0122
R 5507	CARBON RES. 1/4W J 1K Ω	RCX4JATZ0102
R 5508	CARBON RES. 1/4W J 1.8K Ω	RCX4JATZ0182
	SWITCHES	
SW5502	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW5503	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW5504	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW5505	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW5506	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW5507	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
SW5508	TACT SWITCH TS-1230BM or	SST0101VK002
	TACT SWITCH KSM0614B or	SST0101HH013
	TACT SWITCH DHT-1102C or	SST0101LJ001
	TACT SWITCH KPT-1105BM or	SST0101JP001
	TACT SWITCH EVQ PAC 09K or	SST0101MS017
	TACT SWITCH SKHHAP	SST0101AL028
	MISCELLANEOUS	
	WIRE TAPE	0VM404993

Remote Sensor (MCV-C) CBA

Ref. No.	DescriPtion	Part No.
	Remote Sensor (MCV-C) CBA Consists of the following:	———
RS6001	REMOTE CONTROL UNIT NJH32H367A	USESJRSJR004

Remote Sensor (MCV-D) CBA

Ref. No.	DescriPtion	Part No.
	Remote Sensor (MCV-D) CBA Consists of the following:	———
RS6001	REMOTE CONTROL UNIT HC-278N or	USESJRSKK008
	REMOTE CONTROL UNIT GP1U582X	USESJRSSH009

VPS CBA

Ref. No.	Description	Part No.
	VPS CBA Consists of the following:	0VSA06625
	CAPACITORS	
C 5101	CERAMIC CAP. B J 0.001μF/50V	3B41102T
C 5102	CERAMIC CAP. X K 0.0047μF/16V	3X4C472T
C 5103	CERAMIC CAP. B J 470pH/50V	3B41471T
C 5104	SEMICONDUCTOR CAP. SR K 0.1μF/25V or	CDA1EKS0X104
	SEMICONDUCTOR CAP. SR K 0.1μF/25V	12Y2104S
C 5106	MYLAR CAP. 0.022μF/50V J or	CMA1JJS00223
	MYLAR CAP. 0.022μF/50V J	2254223S
C 5108	MYLAR CAP. 0.0047μF/50V J or	CMA1JJS00472
	MYLAR CAP. 0.0047μF/50V J	2254472S
	CONNECTOR	
CN5101	ANGLE SOCKET CONNECTOR, 9P	1770645
	DIODE	
D 5101	CARBON RES. 1/4W J 1K Ω	RCX4JATZ0102

Ref. No.	Description	Part No.
	IC	
IC5101	IC, VPS SAA4700	14D0738
	RESISTORS	
R 5101	CARBON RES. 1/4W J 4.7K Ω	RCX4JATZ0472
R 5104	CARBON RES. 1/4W J 75K Ω	RCX4JATZ0753
R 5105	CARBON RES. 1/4W J 8.2K Ω	RCX4JATZ0822

DSP CBA

Ref. No.	Description	Part No.
	DSP CBA Consists of the following:	0VSA06720
	CAPACITOR	
C 6501	SEMICONDUCTOR CAP. F Z 0.1μF/25V or	CDA1EZS0F104
	SEMICONDUCTOR CAP. F Z 0.1μF/25V	1220520S
	CONNECTOR	
CN6501	STRAIGHT PIN HEADER, 7P 173981-7	1770263
	DIODE	
D 6501	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 6502	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 6503	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
D 6504	SWITCHING DIODE 1N4148M or	NDTZ01N4148M
	SWITCHING DIODE 1N4148M or	QDTZ01N4148M
	SWITCHING DIODE GMB01-BT	GMB01BT
	ICS	
IC6501	IC, OP-AMP. KA324 or	NSBLA0SSM001
	IC, OP-AMP. KIA324P DIP-14	NSBLA0SJY002
IC6502	IC, D FLIP FLOP UPD4013BC or	QSMDA0SNE041
	IC, D FLIP FLOP HD14013BP or	QSMDA0SHT018
	IC, TC4013BP or	QSMDA0STS045
	IC, BU4013B	14DF568
	TRANSISTORS	
Q 6501	RES. BUILT-IN TRANSISTOR KRC103M or	NQSZ0KRC103M
	RES. BUILT-IN TRANSISTOR KSR1203 or	NQSZ0KSR1203
	RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
Q 6502	RES. BUILT-IN TRANSISTOR KRC103M or	NQSZ0KRC103M
	RES. BUILT-IN TRANSISTOR KSR1203 or	NQSZ0KSR1203
	RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
Q 6503	RES. BUILT-IN TRANSISTOR KRC103M or	NQSZ0KRC103M
	RES. BUILT-IN TRANSISTOR KSR1203 or	NQSZ0KSR1203
	RES. BUILT-IN TRANSISTOR 2SC3400	C3400Z
	RESISTORS	
R 6501	CARBON RES. 1/4W J 1K Ω	RCX4JATZ0102
R 6503	CARBON RES. 1/4W J 100K Ω	RCX4JATZ0104
R 6504	CARBON RES. 1/4W J 5.6K Ω	RCX4JATZ0562
R 6505	CARBON RES. 1/4W J 12K Ω	RCX4JATZ0123
R 6506	CARBON RES. 1/4W J 1K Ω	RCX4JATZ0102
R 6507	CARBON RES. 1/4W J 47K Ω	RCX4JATZ0473
R 6508	CARBON RES. 1/4W J 47K Ω	RCX4JATZ0473
R 6509	CARBON RES. 1/4W J 47K Ω	RCX4JATZ0473
R 6510	CARBON RES. 1/4W J 47K Ω	RCX4JATZ0473

DECK MECHANICAL PARTS LIST

Ref. No.	Description	Parts No.
B 1	CHASSIS ASSEMBLY	0VSA05627
B 2	SYLINDER ASSEMBLY or	0VM301885
	SYLINDER ASSEMBLY	0VM201486
B 3	LOADING MOTOR PREPARATION	0VSA04781
B 4	MOTOR HOLDER CALKING ASSEMBLY	0VM403364
B 5	CASSETTE DRIVE LEVER ASSEMBLY	0VM403507I
B 6	PINCH ROLLER ARM ASSEMBLY	0VSA05848
B 7	PINCH ARM ASSEMBLY or	0VM402387
	PINCH ARM ASSEMBLY	0VSA05924
B 8	PULLEY ASSEMBLY	0VSA05505
B 9	MOVING GUIDE S ASSEMBLY	0VSA05722
B 10	MOVING GUIDE T ASSEMBLY	0VSA05723
B 11	LOADING ARM T ASSEMBLY	0VSA05503
B 12	LOADING ARM B ASSEMBLY	0VSA04215
B 13	LOADING ARM M ASSEMBLY	0VM404693
B 14	PINCH ROLLER SP	0VM403949B
B 15	LUMIRROR WASHER 3.1X6X0.35	0VM403269
B 16	CAM	0VM100453
B 21	LOADING BELT or	0VM403432
	LOADING BELT	0VM403952
B 22	P.S.W(CUT)	0VM404679
B 27	BAND BRAKE ASSEMBLY	0VSA04658
B 28	MAIN BRAKE S ASSEMBLY	0VSA04212
B 29	MAIN BRAKE T ASSEMBLY	0VSA04213
B 30	T BRAKE ARM ASSEMBLY	0VSA04641
B 31	AC HEAD ASSEMBLY	0VSA04756
B 32	REEL BASE ASSEMBLY	0VSA04759
B 34	MAIN LEVER ASSEMBLY	0VM402558
B 35	TAPE GUIDE ASSEMBLY	0VM402560
B 36	TENSION LEVER SP ASSEMBLY	0VSA04550
B 37	CAPSTAN MOTOR F2QKB92	MMDDB5ZSJ002
B 38	MODE CHANGE LEVER	0VM201234G
B 39	M BRAKE(S)SPRING	0VM402579
B 40	M BRAKE(S)LEVER	0VM300753
B 41	S BREAKE ARM	0VM301759
B 42	M BRAKE T ARM SPRING	0VM402582
B .43	T BRAKE SPRING	0VM402580
B 44	HEAD ADJUST SPRING	0VM402567A
B 45	M LEVER SPRING	0VM402570
B 46	TAPE GUIDE ARM SPRING	0VM402581
B 47	TAPE GUIDE ARM ADJUST SCREW	0VM403242
B 48	ADJUST NUT (B)	0VM404678A
B 49	BT DRIVE ARM	0VM300756K
B 51	CHANGE ARM or	0VM402441E
	CHANGE ARM A	0VM405857
B 52	BELT FWD or	0VM402397
	BELT FWD	0VM403950
B 53	P.S.W B	0VM402625
B 54	GROUND BRUSH ASSEMBLY or	0VM404524
	GROUND BRUSH ASSEMBLY or	0VM404534
	GROUND BRUSH ASSEMBLY	0VM404827
B 73	FE HEAD HVFHF0002A or	DHVEC01AL001
	FE HEAD VTR-1X2ERS11-109 or	DHVEC01TE001
	FE HEAD MH-131S/KM131400	DHVEC01LA001
B 74	LUMINESCENCE PRISM(B)	0VM301764F
B 76	REC ARM SPRING	0VM402578
B 80	SPRING FOR PRESSING PACK or	0VM405684
	SPRING FOR PRESSING PACK	0VM403674
B 81	M LEVER HOLDER	0VM301717
B 83	RACK SPRING	0VM403894
B 98	T,G CAP (2)	0VM404937
B 103	REC ARM A	0VM301441H

Ref. No.	Description	Parts No.
B 104	REC ARM B	0VM301442G
B 105	REC SPRING	0VM403724
B 108	P.S.W F	0VM402629
B 121	WORM	0VM402429
B 122	P.S.W C	0VM402626
B 123	P.S.W (WORM THRUST)	0VM403348
B 126	PULLEY	0VM301718D
B 127	PULLEY FELT	0VM404952
B 128	KICK ARM HOLDER	0VM301716
B 129	PRESS FIT BUSH	0VM403652
B 130	KICK ARM	0VM404382
B 131	KICK ARM SPRING	0VM404424
B 132	CLUTCH ASSEMBLY	0VSA05509
B 133	ARM IDLER ASSEMBLY	0VSA05512
B 137	BUSH CLUTCH	0VM404513
B 141	PULLEY SUB ASSEMBLY	0VSA05998
B 142	SHAFT LOCK ASSEMBLY	0VSA04642
B 143	GROUND SPRING(U7)	0VM404920A
B 144	CLUTCH WASHER MK2	0VM404428
B 146	SPRING SUPPORTER	0VM405084
B 147	STOPPER BOSS	0VM405188
B 300	FL ASSEMBLY	0VDM06512
B 301	FL BOX	0VM000062
B 302	RACK	0VM201456B
B 303	F DOOR OPENER R	0VM301992D
B 304	DOOR OPENER	0VM302019B
B 306	SLIDER GEAR L	0VM405213
B 307	F DOOR OPENER R SP	0VM405214C
B 308	SLIDER SHAFT	0VM405222
B 309	MIRROR	0VM405224
B 310	MIRROR HOLDER	0VM405225
B 311	DOOR OPENER SP	0VM405302
B 312	CASSETTE DRIVE GEAR	0VM301994
B 313	CASSETTE DRIVE GEAR R SP	0VM405223A
B 314	CASSETTE PLATE	0VM301993
B 315	SLIDER R	0VM201457F
B 316	DOOR LOCK RELEASE ARM SPRING	0VM402508C
B 317	DOOR LOCK RELEASE ARM(3)	0VM405034D
B 319	CASSETTE SPRING STOPPER	0VM402507F
B 321	SLIDER L	0VM100515C
B 322	LOCK LEVER SPRING(E)	0VM405677
B 323	LOCK LEVER L	0VM405215C
B 324	CASSETTE SPRING STOPPER	0VM402507F
B 325	DRIVE GEAR REINFORCEMENT(3)	0VM405785
B 335	GEAR SUPPORTER	0VM405664
B 336	SLIDER GEAR R	0VM405696
B 337	EARTH PLATE	0VM405683D
B 338	P.S.W CUT (3.1X6X0.25)	0VM405809
B 340	RELEASE BUSH	0VM405678
B 342	DECK PLATE	0VM302185A
L1011	SCREW, C-TIGHT M3X9 PAN HEAD+	GPMC3090
L1051	SCREW, S-TIGHT M2.6X6 PAN HEAD+ or	GPMS9060
	SCREW(CAPSTAN) M2.6X6 S-TIGHT	0VM405901
L1053	SCREW, S-TIGHT M2.6X6 PAN HEAD+ or	GPMS9060
	SCREW(CAPSTAN) M2.6X6 S-TIGHT	0VM405901
L1061	SCREW, S-TIGHT M2.6X4 PAN HEAD+	GPMS9040
L1062	SCREW, S-TIGHT M2.6X4 PAN HEAD+	GPMS9040
L1081	SCREW, S-TIGHT M3X6 BIND HEAD+	GBMS3060
L1091	SCREW, S-TIGHT M3X6 CUP HEAD+	GCMS3060
L1101	SCREW, P-TIGHT BIND HEAD 3X8	GBMP3080
L1103	SCREW, P-TIGHT BIND HEAD 3X8	GBMP3080

Ref. No.	Description	Parts No.
L1104	SCREW, P-TIGHT BIND HEAD 3X8	GBMP3080
L1111	SCREW, P-TIGHT M3X8 WASHER HEAD+	GCMP3080
L1112	SCREW, P-TIGHT M3X8 WASHER HEAD+	GCMP3080
L1121	HEXAGON NUT M3	NHMN030
L1151	SCREW, SEMS M3X4 PAN HEAD +	CPM33040
L1191	SCREW, P-TIGHT M2.6X10 PAN HEAD+	GPMP9100
L1202	SCREW, B-TIGHT M3X6 PAN HEAD+	GPMB3060
L1221	SCREW, SPECIAL	0VM403688
L1231	SPACER SCREW ASSEMBLY	0VM403752
L1241	BIND SCREW P-TIGHT M2X6	GBMP2060
L1291	SCREW, P-TIGHT M2.6X6 PAN HEAD+	GPMP9060
L1301	SCREW, P-TIGHT M2.6X8 PAN HEAD+	GPMP9080
L1311	SCREW, B-TIGHT M3X18 PAN HEAD+	GPMB3180

DECK ELECTRICAL PARTS LIST

PRODUCT SAFETY NOTE: Products marked with a ⚠ have special characteristics important to safety. Before replacing any of these components, read carefully the product safety notice in this service manual. Don't degrade the safety of the product through improper servicing.

NOTE: Parts that not assigned part numbers (----------) are not available.

Tolerance of Capacitors and Resistors are noted with the following symbols.

C..........±0.25%	D..........±0.5%	F..........±1%
G..........±2%	J..........±5%	K..........±10%
M..........±20%	N..........±30%,	Z..........+80/-20%

Head Amp (PRV) CBA

Ref. No.	Description	Part No.
	Head Amp (PRV) CBA Consists of the following:	**0VSA05794**
	CAPACITORS	
C 3501	CERAMIC CAP. F Z 0.1µF/50V	3F40104T
C 3502	ELECTROLYTIC CAP. 100µF/6.3V M H7	526R107S
C 3503	ELECTROLYTIC CAP. 0.22µF/50V M H7	526W224S
C 3504	CERAMIC CAP. Y M 0.01µF/16V or	3Y4D103T
	CERAMIC CAP. F Z 0.01µF/16V	1220842T
C 3505	CERAMIC CAP. Y M 0.01µF/16V or	3Y4D103T
	CERAMIC CAP. F Z 0.01µF/16V	1220842T
C 3506	CERAMIC CAP. Y M 0.01µF/16V or	3Y4D103T
	CERAMIC CAP. F Z 0.01µF/16V	1220842T
C 3507	CERAMIC CAP. F Z 0.1µF/50V	3F40104T
C 3509	CERAMIC CAP. F Z 0.1µF/50V	3F40104T
C 3513	CERAMIC CAP. SL J 15PF/50V	3S41150T
C 3521	CERAMIC CAP. B J 100PF/50V	3B41101T
C 3522	CERAMIC CAP. SL J 47PF/50V	3S41470T
	CONNECTORS	
CL3502	JUMPER WIRE, 6P	WX1K7010-002
CN3501	ANGLE SOCKET CONNECTOR 15P	1770610
CN3502	FFC CONNECTOR BASE, SIDE 5P or	JC96J05ERC0C
	FFC CONNECTOR BASE, SIDE 5P	1700471
CN3503	CONNECTOR ASSEMBLY 2P	WX1K7010-007
	IC	
IC3501	IC, VIDEO H-AMP LA7376	QSBLA0SSY035
	COIL	
L 3501	INDUCTOR 22µH-K-26T or	LLAXKDTKA220
	INDUCTOR 22µH-K-26T	LLAXKATTU220
	RESISTORS	
R 3501	CARBON RES. 1/4W J 22K Ω or	RCX4JATZ0223
	CARBON RES. 1/6W J 22K Ω	132A223T
R 3502	CARBON RES. 1/4W J 8.2K Ω or	RCX4JATZ0822
	CARBON RES. 1/6W J 8.2K Ω	132A822T
R 3503	CARBON RES. 1/4W J 1K Ω or	RCX4JATZ0102
	CARBON RES. 1/6W J 1K Ω	132A102T
R 3504	CARBON RES. 1/4W J 5.6K Ω or	RCX4JATZ0562
	CARBON RES. 1/6W J 5.6K Ω	132A562T
R 3505	CARBON RES. 1/4W J 33K Ω or	RCX4JATZ0333
	CARBON RES. 1/6W J 33K Ω	132A333T
	MISCELLANEOUS	
2B 2	SHIELD, TOP	0VM301927
2B 3	SHIELD, BOTTOM	0VM301928

Jnt CBA

Ref. No.	Description	Part No.
	Jnt CBA Consists of the following:	**0VSA05796**
	Joint (Joint-A) CBA	----------
	Mode SW (Joint-B) CBA	----------
	ACE Head (Joint-C) CBA	----------

Joint (Joint-A) CBA

Ref. No.	Description	Part No.
	Joint (Joint-A) CBA Consists of the following:	----------
	CONNECTORS	
CN2801	FFC CONNECTOR BASE, TOP 9P or	JC2SJ09ERH0C
	FFC CONNECTOR BASE, TOP 9P or	1700915
	FFC CONNECTOR BASE, TOP 9P or	1700449
	FFC CONNECTOR BASE, TOP 9P or	1700515
	FFC CONNECTOR BASE, TOP 9P	1700986
CN2901	ANGLE SOCKET CONNECTOR, 20P	1770615
CN2902	ANGLE PIN HEADER, 2P	1740775
	RESISTORS	
R 2801	CARBON RES. 1/4W J 27K Ω or	RCX4JATZ0273
	CARBON RES. 1/6W J 27K Ω	132A273T
R 2802	CARBON RES. 1/4W J 27K Ω or	RCX4JATZ0273
	CARBON RES. 1/6W J 27K Ω	132A273T
	MISCELLANEOUS	
CL2901	JUMPER WIRE, 5P	WX1K7010-003
CL2902	JUMPER WIRE, 6P	WX1K7010-001
	FFC CABLE, 9P	WX3909QZ4413

Mode SW (Joint-B) CBA

Ref. No.	Description	Part No.
	Mode SW (Joint-B) CBA Consists of the following:	----------
SW2901	MODE SWITCH HMW0420-710010	SSR0104HD001

ACE Head (Joint-C) CBA

Ref. No.	Description	Part No.
	ACE Head (Joint-C) CBA Consists of the following:	----------
CN2903	FLAT CABLE CONNECTOR 6P or	JEHBJ06JE001
	FLAT CABLE CONNECTOR 6P	JC88J06NB001